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**HANDBOOK OF BUSINESS
ADMINISTRATION**

HANDBOOK OF BUSINESS ADMINISTRATION

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PREFACE

The American Management Association has felt for some time the need for bringing together in convenient handbook form not only a digest of the best of its own publications, fully revised, but also contributions covering the field of modern management methods. Consequently, arrangements were made with the publishers for the preparation and publication of this Handbook. It is hoped that in this form executives of all grades and types, and students of management generally, will find a reasonably complete picture of modern management methods.

One of the most pressing problems of management today grows out of extreme specialization in executive duties, which, during the last ten or fifteen years, has somewhat destroyed the opportunity for that well-rounded experience which prepares an executive for promotion into general managerial positions.

That this tendency has gone too far is indicated by the opinion often expressed that it is extremely difficult to find men for promotion into positions of major managerial responsibility. Another complaint frequently voiced is that many executives concerned primarily with finance know altogether too little about production or marketing and that similarly marketing and production executives often know altogether too little about the other major aspects of the business.

It is equally true that specialists within these major functional divisions of a business often know too little about special sectors of their particular field, such as production management, marketing, or finance.

The net result is an extremely difficult problem of coordinating different activities with a particular function, such as finance, production, or marketing, and sometimes a still greater problem of coordinating the activities and points of view of executives having major functional activities.

There are several ways of meeting this difficulty, including, among others, organized managerial training within a corporation, systematic use of the opportunities offered by universities through extension courses and night-school courses, planned attendance at conventions and conferences of management and other associations, and the reading of current magazines.

It is a fundamental of sound educational procedure, however, that what is learned should be learned, so far as possible, at the time when the need arises and at a time when what is learned may be put into practice through improved skill.

This "Handbook of Business Administration" will, to a considerable extent, meet this educational need by providing in a form convenient for study the fundamentals and the procedures of managerial policy and technique which may be put to use by business executives as problems arise and as the business process changes.

It is our hope, too, that this "Handbook of Business Administration" will find its way into the hands of many business executives who have heretofore not been associated with the management movement either in America or abroad.

Essentially the Handbook has been prepared to meet the needs of the following groups:

1. Executives of general managerial rank who want a source of information which will help them to determine the relative efficiency of their own functional departments. A president or a general manager, for instance, by reviewing the section on Production or Office Management or Personnel can gain a well-balanced picture of tested practice in those fields and is thus able to form an idea of the extent to which his own similar department has succeeded in keeping pace with up-to-date practice.

2. Those major functional executives who are similarly anxious to maintain a perspective on progress in various sectors of their special fields. The vice president in charge of production, for instance, will find in the Production Section a means of judging the relative efficiency of a production control department or the inspection department and of reappraising his plan of incentives for manual workers.

3. Those business executives of more or less specialized responsibilities who desire a bird's-eye view of sound accepted practice in their own particular field of activities, such as marketing, production, finance, and office management. The time study engineer can do his work best if he is thoroughly familiar with the whole production process. One specialized activity cannot live unto itself. Time study work, for instance, has a close relationship to design, to personnel, to production control, to quality control, and to many other aspects of production.

4. Those specialized executives who need and wish to have at hand a source of information and the point of view of executives in specialties other than their own, particularly as a means of developing their own capacities in anticipation of promotion and partly so as to permit them to conduct their own specialized activities with a greater understanding of their relationship to other activities within the organization.

The contributors to the various sections of the Handbook have been carefully chosen as leaders in their respective fields. Their contributions represent what is believed to be among the best in modern managerial policies and procedures. The Production Section, for instance, of itself is a handbook, to a considerable extent, for production executives ranging from vice president in charge of manufacturing to the supervisor of specialized activities or departments.

W. J. DONALD,
Editor-in-Chief.

NEW YORK,
June, 1931.

ACKNOWLEDGMENTS

The editors have made every effort to secure the different contributions from those most eminently qualified in the various fields, but neither they nor the American Management Association assume specific responsibility for statements of opinion made by the contributors. The editors recognize, too, that doubtless there are many equally competent contributors on the various subjects embraced in the Handbook. Nevertheless, every effort has been made to secure a contribution in each case from one of the outstanding men in the field.

The outline of the contents for the Handbook and, to a large extent, the choice of contributors have been made by the editors with the advice and cooperation of an advisory committee and sub-committees. Grateful acknowledgment is made to the following:

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must consider whether it is wise to aim for vast achievements in the large-scale operation and run the risk of obscurity which is attendant upon mediocrity, or whether it is better to aim for larger and quicker recognition in small-scale operations and perhaps have little or no opportunity for large rewards.

Because of the rapid increase and rapid growth of big business, the conduct of each individual business naturally has wider and wider effects on other businesses, big and little. These effects are in three general directions.

The management of each individual business has a direct effect on all who buy from or sell to it, from the producer of raw materials to the ultimate consumer.

The management of each individual business has a direct effect on the operations of all in competition with it. Marginal producers who do not know their costs represent ignorant competition. Those businesses which set out to dominate an industry by truculent methods represent unfair competition. This competition may be for materials as well as for consumers, for employees as well as for distributors.

The proper financing of a business has a definite relationship to regularity of employment. Companies follow practices out of sheer necessity which they would not follow if they were in a position to maintain the proper kind of balance sheet. Inadequately financed companies are almost certain to be those which cannot afford to manufacture for stock out of season. Consequently, employees suffer the deprivations which are inevitably associated with seasonal irregularities of production and employment.

In a period of business stress those companies which are inadequately financed are forced to abandon personnel not absolutely needed at the time and to sacrifice their investment in selection, training, development and promotion. They have no other choice. A corporation properly financed might in a period of business stress take delayed action in eliminating from the organization men who should not have been kept on so long, but it takes no steps whatever to eliminate key men just because of current business conditions.

A recession in business becomes the occasion for directing the efforts of such men into channels which would ordinarily have to be neglected during a period of normal business.

Budgeting, one of the accepted techniques of modern business administration, has a very important social and economic influence, not only because of its effect on the company itself, but also because of its effect on other companies and on business in general. The company without a budget and unable to make comparisons of results against estimates is in danger of overexpansion in a period of favorable conditions and is in equal danger of becoming timid and of making altogether too drastic curtailments in a period of business recession.

The budget provides a plan for a certain period of time, usually in considerable detail for a six to twelve months period and in less detail for a period of two or three years in advance. With such a tool of administration at hand it is possible to look over a long period with some degree of equanimity and adopt policies in regard to executive and rank and file personnel that are constructive not only for the company but also for the community.

A company lacking a budget cannot view its affairs from the long run point of view and is in danger of adopting policies and practices which contribute to and aggravate the social problem of unemployment, decrease of consumer purchasing power, and all of the other social and economic evils which attend a period of business uncertainty.

Budget comparisons permit an analysis of business operations which lead to the discovery of sound economies, not of those imaginary economies which should not be made because they would affect activities or production in such a way that sales and income would be adversely affected.

Advertising programs can be conducted in such a way as to help stabilize business and employment. While it is generally true that companies advertise more freely when business is good, nevertheless, an increasing number of companies are setting up a reserve when business is at the highest point, a reserve which is thrown into action when business is not so good. This advertising program helps to stabilize the particular business, to maintain employees of the particular company, to maintain purchases during a period of business recession, to maintain employees' consumer purchasing power and thus favorably to affect the market of other producers while at the same time alleviating, so far as one company can, the social problem attendant upon unemployment.

The ramifications of business administration in the economic and social structure are gradually becoming so well recognized that each year public, employees, and management itself are coming more and more to regard management as a profession with public obligations.

The responsibilities of management to the personnel of an organization appear more and more in various forms through the adoption of a minimum guarantee of employment, voluntary company insurance plans, in the form of pensions, group insurance, accident prevention, sickness prevention and health education, through efforts to regularize employment, not only seasonal unemployment but also cyclical unemployment, and in training employees for increased efficiency.

That this public obligation of management is recognized in America is indicated by the fact that American corporations are in growing numbers voluntarily adopting standards of responsibility to employees more favorable to employees than the minimum guarantees provided for by legislation, not only at home but also abroad.

In fact, this tendency for business administration to adopt policies and practices in excess of legislative requirements is one of the truest indications that in America at least management is emerging as a profession because, after all, one of the indices of a profession is that it recognizes its responsibility to the public.

Another point at which business administration is affected with public interest lies at the point at which it must coordinate the effects of technological developments and the interests of the consumer, stockholder, and employee. It is increasingly recognized that business problems are being solved soundly when they are solved in the interests of the consumer, for whom, after all, fundamentally a business and all business must exist. The consumer interest is not served by restraint on technological improvements which

postpones unduly the benefits which may accrue to the consumer from improved methods which produce a better product.

In this connection, it is important to note that the only complete study of the effect of technological changes on unemployment that has yet been made indicates that mechanical developments, while they have reduced the required amount of unskilled labor, have increased the demand for skilled labor. They have also led to a grading up of the work and an increase in the earnings of what had formerly been a large part of the unskilled labor.

Another social aspect of business administration lies in the comparatively widespread distribution of the ownership of the modern business. Since 1920 the number of stockholders in American corporations has increased several times, there being many instances of corporations whose stockholders today number anywhere from ten to twenty times as many as in 1920. Many of these stockholders are employees of the corporation itself. An equally large number, probably a larger number in most cases, are employees of other companies. Of the remainder a certain proportion are the traditional widows and orphans, and the balance are financial and other similar investing institutions and individual capitalists. As managers are trustees for stockholders, certainly this distribution of securities is taking on new aspects quite unanticipated in the era of ownership management. Nor is that public, and therefore social, responsibility likely to decrease in the long run.

Nor is the interest of the consuming public likely to remain as unorganized or as incoherent as at present. Undoubtedly the day will come when the consumer investor will find ways and means of expressing himself so that public attitude will be more and more favorable toward successful, profitable corporations. More and more the interest of the consumer in a serviceable product at a fair price, efficiently produced and marketed will merge with the interests of the same consumer as stockholder in a business which is profitable because it serves the consumer well.

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"Surveys" are being sold as cure-alls for marketing ills. The medicine man is having his day.

Before we can hope to get any adequate concept of the true function of market research and analysis, it is necessary to clear the air of all this biased pursuit of information, this opportunistic problem pecking, and to inquire whether or not research can be used to promote the soundness of marketing decisions.

Any marketing manager¹ must make a series of decisions whether he wants to or not. Many of the conditions involved in these decisions are unknown. Many not measured. Many immeasurable in any concrete sense. He can never hope to get enough information about his markets to give perfect support to all his decisions. But neither can he afford to ignore any information that is readily available, or any that can be secured at a reasonable cost, if that information will help him to reach better-informed decisions.

What Kind of Information Will Help the Marketing Manager? The marketing manager should welcome any information that will help him:

1. To define his present market situation together with the long-range trends which have led up to it.
2. To discover what major and underlying factors are dominating that situation and how these factors can be influenced or controlled.
3. To set up a plan for keeping in touch with the behavior of these dominating factors and for measuring the results of any efforts made to influence or control them.

It is the function of market research and analysis to provide such information.

Diagnosing the Market Situation. In attempting to diagnose a market situation one is in danger of becoming overenthusiastic about some bit of information secured early in his study and of being too quickly satisfied that he has hit upon the final solution to his problem. We are so accustomed to reading fairy stories about market research in which an interview with Mrs. Montgomery in Youngstown or with grocer Schultz in Detroit led to revolutionary changes in a company's marketing program, that we are likely to get the notion that information from one or two sources is sufficient basis for major decisions in marketing. But such is not the case.

In studying an industry, a manufacturer may observe that sales are increasing for the industry as a whole and, guided by this information alone, he may become unduly optimistic and plan to increase his volume of sales. But without studying in the market itself and without an analysis of production and marketing costs, it would be dangerous to assume that such an increase in volume could be secured at a profit. For a study among consumers may indicate that certain groups of consumers can be served more profitably than others. And an analysis of profits on various products will reveal which are the most profitable items. Such information may lead to a marketing program which will effect a reduction in sales volume and, at the same time, secure an increase in profits.

¹ Marketing manager is defined as the manager of advertising, sales, transportation, and any other activity involved in the movement of the product from producer to consumer.

In other words, the important decisions made by any marketing manager should rest upon a well-balanced diagnosis of his marketing situation. Such a diagnosis involves three general types of market study:

First, a study of the industry in which a company belongs, including problems common to every company operating in the industry, and the relative position of the company and of each competitor in the industry as a whole.

Second, a study of the company's problems from the inside out, including written records bearing on the company's marketing experiences, as well as unrecorded specifics in the minds of its employees.

Third, a study of the company's problems from the outside in, including the consumer market and the entire distributive system employed in carrying the company's products from producer to consumer.

I. STUDYING THE INDUSTRY IN WHICH A COMPANY BELONGS

Sources of Industrial Information. Most industries have come to realize that many of the marketing problems of individual companies in that industry are common to the industry as a whole. Some have organized associations. Almost without exception these industrial associations have for one of their primary objects the collection and exchange of market information intended to be mutually useful to all members of the association. Ordinarily, however, it is helpful to consult, in addition, such sources as the following:

1. Government bureaus.
2. Banks and investment companies.
3. Publishing companies.
4. Competitors.
5. Foundations.
6. Public libraries.

Gathering and Interpreting Industrial Information. Anyone who attempts to bring together the essential information available on an industry should have a thorough acquaintance with sources of information. He should be experienced in differentiating between fact and opinion. He should know the economic motives of the type of organization responsible for each piece of information that he gets and he should know how these economic motives are likely to affect the unbiased gathering and interpreting of market information. In dealing with industrial leaders among trade associations, publishing companies, or competitors, he should have the ability to inspire sufficient confidence on the part of those whom he interviews to get any "inside" information that has some relation to the present condition and future trends in the industry. He should, through it all, have a keen eye and ear for essentials.

The right man on the job is usually able to get some definition of the general dimensions of the industry, the size of the potential market, the long-range trends within that industry, and the general factors which appear to be dominating the industry as a whole.

As an example, a study of the baking industry will be presented. Space will not permit a presentation of the entire report. Under each heading, only enough information will be given to indicate the kind of material secured and the sources used.

The Baking Industry

Purpose. The purpose of this study of the baking industry is to analyze some of the more vital available statistical information as well as to summarize informed opinions secured from leaders in the industry.

The Product.¹ Prior to 1921, the only census information relative to bakery products was divided between the cracker industry and all other bakery products. However, from 1923 to 1927, the U. S. Biennial Census of Manufacturers has separated "bread, rolls, and coffee cake," and "cake, doughnuts, etc.," from "biscuits, crackers, and cookies," "pie," "pretzels," and "all other products." The relative importance which "bread, rolls, and coffee cake" and "cake, doughnuts, etc.," bear to the total industry is shown in the following table which expresses the percentage which their values bear to the value of the total industry.

A COMPARISON OF THE VALUATION* OF CAKE AND BREAD PRODUCTS
EXPRESSED AS A PERCENTAGE OF THE TOTAL VALUE OF ALL BAKERY
PRODUCTS

Year	Total value		Bread, rolls, and coffee cake		Cake, doughnuts, etc.	
	Amount	Per- cent- age	Amount	Per- cent- age	Amount	Per- cent- age
1927	\$1,236,976,348	100	\$693,922,151	56.1	\$227,307,364	18.4
1925	1,075,065,813	100	594,377,068	55.2	170,496,714	15.9
1923	1,122,906,314	100	631,325,019	56.2	190,251,607	16.9

* Only those firms who gave detailed information are included in these figures.

From "The Baking Industry," published by *Baker's Weekly*, we obtain the following:

"A typical cost sheet on bread production shows that 47 per cent of the cost is for ingredients. Flour is, of course, the major item . . ."

One leader in the industry told us:

"There is no outstanding problem which faces the industry so far as maintaining quality of product is concerned; by this I mean that most of the producers have formulas which are essentially similar and there is very little difference in the quality of the bread on the market today; to be sure some loaves cut better than others and some taste a bit different, but in the long run the bread on the market today is generally good.

"The producers face a big problem in the manufacture of cake. The fact that they have not yet been able to really perfect the eating quality of cake is a handicap to them. It is one of the reasons that they find it hard to break into the market. They have not yet learned the art of baking cake on large

¹ McCOLLUM, E. V., Sc.D., Ph.D., Department of Chemical Hygiene, Johns Hopkins University, "The Bread of Life," in *Baking Technology*, American Institute of Baking, vol. II, No. 9, p. 268.

FISHER, MORRIS, M.D., *The Journal of the American Medical Association*, "Bread as the Physician Sees It," an address delivered before American Baker's Association at Buffalo, New York, Sept. 17, 1925.

scale production so that it approximates the quality of home-baked goods . . . "

Production. In 1850¹ when the first census of manufacturers was conducted, there were reported to be 2,027 baking establishments employing 6,727 wage earners. Since 1850 the baking industry has grown rapidly. In 1850 the per capita value of bakery products was \$0.58. In 1927, the latest population estimates showed that the value per capita had risen to \$11.78. The population of the United States had increased 418 per cent in this period of time, and the value of bakery products per capita had increased 1,930 per cent.

At present, there are five different classifications of producers.

1. Large organizations engaged exclusively in the manufacture of bakery products and operating in a number of states—Continental, General, Ward, and others.

2. Chain store bakeries, like the Atlantic and Pacific, Kroger, and others.

3. Associations of bakers, like the Quality Bakers of America which is made up of independent wholesale bakers throughout the United States, chiefly east of the Mississippi.

4. Wholesale bakers who do a wholesale or combination wholesale and retail business and who are independent of the above three.

5. The small neighborhood bake shop primarily engaged in a retail business.

No figures are available which show accurately the percentage of total business done by these different types of producers. However, figures that afford the basis for a rough estimate are available. In a booklet entitled "Combinations in the Baking Industry," published by the Food Research Institute Publications, Stanford University, California, it is estimated that the following companies used 7,000,000 barrels of flour in 1925:

Continental Baking Corporation.
Ward Baking Company.
General Baking Company.
Purity Bakeries Corporation.
Southern Baking Company.
Cushman's Sons, Inc.

This figure represents approximately 25 per cent of the total flour consumption by the industry in that year . . .

The Market. Following is a tabulation derived from U. S. census data relating to the trend in per capita consumption of bakers' bread and cake:

PER CAPITA CONSUMPTION

Year	All products	Bread, rolls, coffee cake	Cake, doughnuts, etc.
1927	\$11.78	\$5.85	\$1.91
1925	10.99	5.16	1.48
1923	10.15	5.70	1.72
1921	10.11	*	*

* Figures not available until 1923.

¹ H. KYRK and J. S. DAVIS, "The American Baking Industry, 1849-1923," published by Stanford University, 1925.

electric vehicles . . . The 1925 census reported 9,713 bakeries using a total of 41,740 vehicles, divided as follows:

Horse drawn.....	8,991
Gasoline.....	28,879
Electric.....	3,870

A recent study made by the engineering staff of *Baker's Weekly* shows that the average expenditures for tires per day amounted to 64 cents for each truck. *Baker's Weekly* continues to say, "In fact, the average wholesale plant spends as much for tires as for oven fuel . . ."

With all wholesale bakeries, delivery is an important department. Twenty per cent of gross sales is regarded as a reasonable delivery cost. House-to-house bakeries, of course, have higher delivery costs . . .

Opinions of Industrial Leaders Interviewed. Confidential opinions offered by leaders in the baking industry were included at this point in the report.

These brief excerpts taken from a sample industrial study will indicate how a general acquaintance with printed information and informed opinion in relation to an industry as a whole, paves the way to an intelligent study of the market problems peculiar to an individual company in that industry.

II. STUDYING FROM THE INSIDE OUT

An internal study usually involves such sources of information as the following:

1. The marketing organization of the company.
 - a. Management and executive staff.
 - b. Sales force.
 - c. The advertising agency.
2. The sales costs and profits records of the company.
 - a. By products.
 - b. By territories.
 - c. By types of outlets and consumers.

Getting Unrecorded Specifics from the Marketing Organization. Those who have been in the advertising or sales organization for some time have had a favorable opportunity to observe long-range trends that affect the marketing of the product. Major and minor executives, including branch managers and sales supervisors, generally have, stored away in their minds, an immense amount of valuable information in the form of unrecorded specifics. While a full expression of ideas should be encouraged, yet it should be remembered that a large share of the information secured from this source is to be classified as opinion. In later field study these opinions can be subjected to the test of evidence.

Usable information can sometimes be secured from company salesmen providing some plan of conversation is followed that does not involve the personal interests or the ability of the salesmen. The experiences of some have led them to conclude that salesmen should never be used as a source of market information. But salesmen do possess specific information about the characteristics of sales territories which cannot conveniently be secured from any other source.

In all of these personal contacts, part of the job of the research man is to encourage members of the marketing organization (1) to appreciate the soundness of market analysis; (2) to strive for an effective application of the results of such analysis; and (3) to base, as far as possible, everyday decisions on impartial facts.

Analyzing the Company Records. Every company which has been marketing a product over a period of years has accumulated a wealth of information which, if properly analyzed, should help to locate some of the sales resistances that the company has encountered.

Sometimes the simplest kind of sales analysis furnishes an entirely new interpretation of sales experience. Let us take an example of the manufacturer who looked at his records and said "Sales are off in the Middle West." To begin with, this manufacturer is selling his product in two forms so that instead of selling one product he is really selling two products. A sales analysis showed that while total sales appeared to be off in the Middle West, sales on one form, *A*, of his product were increasing. But sales on the other form, *B*, were declining sufficiently to cause total sales to decline. Further analysis of declining sales on form *B* showed that they were not declining in the entire Middle West but only in the Chicago territory. Still further analysis showed that sales were not declining in the Chicago territory as a whole but only among one class of jobbers in this territory. So that what was called a decline in sales in the Middle West turned out to be a decline in sales of one form of the product to one class of jobbers in one territory.

Sometimes the simplest kind of cost and profit¹ analysis leads a company to emphasize its more profitable items and to direct its selling effort to those groups of consumers, and to those geographical territories, that can be served at the greatest profit.

Any established company can make a wide variety of studies based entirely on its records of sales, costs and profits. But in this brief treatment of market analysis, studies from the inside out will be discussed only in so far as they can be used to give sense of direction to, and facilitate the progress of, field studies that are designed to reveal what major factors influence the sale of a product.

Comparing Sales with Common Market Indexes. The case of X Company will be presented to illustrate the method of conducting a preliminary analysis of sales which leads to an intelligent selection of locations for field study. In the first place, a separate analysis was made for each product. Next, the following common market indexes² were used to reveal relatively high or low sales on each product:

¹ For a discussion of cost and profit analysis at various stages of volume increase, see discussion on total business situation, Chap. II, pp. 38-44.

² Available market indexes are used in this analysis solely to indicate relatively high or low sales. In handling these indexes one so inclined can easily juggle or weight them so that some combination conforms nicely with the sale of the product, but as long as the juggled index does not include the more important factors that influence the sale of the product, the conformance of the index is largely a coincidence—largely a case of "forcing the answer." When such a coincidence is accomplished, one is in danger of (1) overemphasizing the factors that so accommodatingly provide such smooth conformance, and (2) forgetting many other factors which may deserve an important place in explaining sales and in setting a basis for the intelligent improvement of sales.

**CHECK LIST OF FACTORS WHICH MAY AFFECT THE SALE AND THE
CONSUMPTION OF A PRODUCT**

- A. Factors related to market characteristics.**
 - 1. Natural conditions which may affect the sale of the product.
 - a. Climate.
 - b. Hardness of water.
 - c. Topography.
 - d. Proximity to ocean, sea, or river.
 - 2. Type of location.
 - a. Cities.
 - b. Towns.
 - c. Rural districts.
 - 3. Type of home.
 - a. Apartment.
 - b. Hotel.
 - c. Individual dwelling.
- B. Factors related to the product.**
 - 1. Possible uses of the product.
 - 2. Price of the product, constant or variable.
 - 3. Form of the product.
 - 4. Uniformity.
 - 5. Raw material used.
 - 6. Package or container.
 - 7. Trade name or brand.
 - 8. Style.
- C. Factors related to the consumer.**
 - 1. Classes of people.
 - a. Age.
 - b. Sex.
 - c. Income.
 - d. Education.
 - e. Occupation.
 - f. Nationality.
 - g. Race.
 - h. Religion.
 - 2. Buying habits.
 - a. Time and frequency of buying.
 - b. Quantity in which product is bought.
 - c. Product bought by brand name.
 - 3. Present uses.
 - a. Number of uses.
 - b. Kinds of uses.
 - 4. The consumer's familiarity with correct uses of product.
 - 5. Product likes or dislikes.
- D. Factors related to competitors.**
 - 1. The nature of competing products.
 - 2. Relative goodwill and strength of each competing product in different locations.
 - 3. Aggressiveness of each competitor.
 - 4. Their methods of selling, advertising, and transporting.
 - 5. Price differences between the product and competing products.
 - a. To consumers.
 - b. To trade.

E. Factors related to advertising.

1. Advertising media and methods used in different territories in the past and present.
 - a. To consumer.
 - b. To trade.
2. Advertising appeals used in different territories in the past and present.

F. Factors related to distribution.

1. The channels of distribution used in different territories.
2. The number, class, and location of brokers and jobbers.
3. Branch office and warehouse facilities.
4. Methods of transportation used.
5. Attitude of all dealers toward.
 - a. The product.
 - b. The advertising.
 - c. The company.
6. The buying habits of the trade.
 - a. Quantities in which product is bought.
 - b. Time and frequency of buying.
7. The number, class, and location of retail outlets.
 - a. Chain or independent.
 - b. Accessibility of retail outlets to the consumer.

G. Factors related to the company's sales organization in different territories.

1. Type and number of salesmen.
2. Use of brokers' salesmen.
3. Salesmen's routes.
4. Frequency of salesmen's calls.
5. Selection and training plan for salesmen.
6. Helps for salesmen.
7. Incentives for salesmen.

III. STUDYING FROM THE OUTSIDE IN

No extensive field investigation should be initiated until a preliminary study has been tried out on a small scale and, while limited in scope, this preliminary survey should not be hasty or superficial. It should rather be thought of as a period for thoughtful planning during which one (1) conducts a careful and thorough search for evidence on the factors which affect the marketing situation and (2) develops sound method for getting, at the lowest possible cost, whatever evidence is most significant and pertinent. The preliminary survey requires the services of a very few experienced investigators who have unusual powers of observation and the ability to sense the relative importance of new angles of the study as they are developed.

In this preliminary study it is necessary to secure only a limited number of interviews. But it is usually more fruitful to secure these interviews in three or four locations (preferably where sales are relatively at their best and at their worst) than to confine interviews to a single location. One can more easily discern factors which affect the sale of a product positively or negatively when he looks for those factors in locations where sales have been relatively high and in locations where sales have been relatively low. After trying out

5. At what time of the day, week, month, or year is the product usually bought?

6. Is the product bought as it is needed, or does the consumer wait for special sales?

Media

Definition. Media used in reaching the consumer direct, or the consumer through the dealer.

Sample questions:

1. What media seem to be most effective in reaching present and prospective consumers? (Newspapers, magazines, direct mail, outdoor, package inserts, general publicity, radio, house-to-house, personal contact, etc.)

2. What method of advertising seems to be most effective in reaching the consumer through the dealer? (Store demonstrations, window displays, inside-store and counter displays, premium sales, etc.)

Effects of Merchandising and Sales Service

Definition. Consumer attitude toward the merchandising and sales service offered by the company and its competitors.

Sample questions:

1. What is the attitude of consumers toward the terms offered by the company or by competitors?

2. What is the attitude of consumers toward the delivery service, or returned goods policy of the company and of competitors?

3. Does the sales service of the company really build goodwill in the minds of consumers by making them feel that the company's interest in the product does not stop with the sale of the product, but that the company is interested in seeing that the product gives the service promised?

4. Does the company's merchandising and sales service really stimulate sales?

Effects of Company Advertising

Definition. The effects of company advertising upon consumers.

Sample questions:

1. What percentage of those reached by various advertising methods are prospective customers?

2. Among what percentage of these prospects does the company's advertising produce the desired effect?

3. What are the relative costs of various advertising media in terms of available measures of results produced among consumers?

Characteristics of Competing Products

Definition. The characteristics on which the competition of other products is based.

Sample questions:

1. What consumer likes and dislikes are associated with each competing product?

2. For what purposes is each competing product primarily used?

3. Does the consumer think of my product as a substitute for competing products, or *vice versa*?

Do Not Freeze the Results of a Survey in Advance. In building a questionnaire to be used in a consumer investigation, one is in danger (especially if he has conducted a preliminary survey) of feeling that he knows enough about the information to be secured that he can build up a completely pre-coded questionnaire. To do so is to freeze the results of a study in advance.

Those interviewed are thereby led to give a stereotyped answer. Information thus secured drops nicely into prearranged pigeon holes and can easily be tabulated by machine. But such a procedure is likely to preclude the possibility of getting the kind of information that sometimes turns out to be most vital and surprising. To digress for a moment, let us recall the story of the old gentleman who passed by a little boy who was fishing. When he asked the youngster what he was fishing for, the answer came back, "Wooglies!" "Wooglies?" queried the old gentleman, "What in sam hill are Wooglies?" "I don't know," returned the youngster, "I haven't caught any yet." The investigator cannot be sure what he is going to find out. He is fishing for "Wooglies." Questions taken from a pre-coded questionnaire, that was used in a consumer investigation for a shoe manufacturer, should be sufficient to illustrate the principle.

This is the way it should *not* be done:

Questions	Code
Why do you like X shoes?	
Better looking.....	24-1
More comfortable.....	2
Not too heavy.....	3
Not too light.....	4
Wear longer.....	5
Why do you dislike X shoes?	
Do not wear well.....	25-1
Store service.....	2
Too expensive.....	3
Too heavy.....	4
Too light.....	5
Too stiff.....	6
Too unattractive.....	7
Too uncomfortable.....	8

If the like and dislike question is handled in the above way, the investigator is likely to use the possible answers listed as the basis for leading questions, and a check mark after one or more of these predetermined answers may be either insufficient or misleading.

If, on the other hand, likes and dislikes are secured by engaging a person in conversation and by recording the interview in the consumer's own words, the investigator will get a far truer picture of the consumer's attitude. Such an attitude may be: "Oh, I would just as soon wear X brand of shoes as Y brand. I have been wearing either one or the other for nearly six years now. I like the shape of the X shoe, but the Y shoe seems to support my foot a little bit better. But I think the X shoe is more stylish looking and it seems to me that it is easier to break in an X shoe. I usually buy my shoes at the Z

The Difference between Answers and Facts. Getting worthwhile information from the consumer is not a job to be handled by an amateur. Almost anyone can get answers to questions but one must be trained to get facts. The consumer is usually anxious to please the investigator and will frequently say whatever he thinks the investigator would like to hear. For this reason, the skilled interviewer knows that sometimes he must draw out the *facts*; he is not always satisfied with the first answer he gets to a question, for sometimes first answers do not coincide with the facts.

In one survey, for example, a manufacturer wanted to know whether or not the housewife had bought his product within the past ten days. In answer to this question one housewife said, "Oh, yes, I have a box in the kitchen now—I bought it only the other day." In order to be sure that she had really bought, the investigator wanted to *see* the box so he began to talk about the condition in which the package reached her. He said that the goods left the factory in good condition, but that he was always interested in knowing how they reached the consumer. She went to the kitchen to get the box and came back smiling with another brand of the goods in her hands. "Oh, say, this is Y brand that I bought the other day. I was thinking that it was X. You know there are so many different ones on the market that . . ." The housewife's first answer to the "Did you buy" question was "yes" but the *fact* was that she had not bought. This is one illustration of the difference between getting answers and getting facts.

Conversationalizing the Person Interviewed. Many market investigators seem to have taken literally Bacon's statement, "He that questioneth much shall learn much," and have made question boxes out of themselves. It is well to have questions in mind, but it is much better to secure information by engaging in conversation than by asking direct questions. The housewife, for instance, will listen to direct questions with patient and courteous attention, saying "yes" and "no" without really knowing what the interviewer is talking about.

If the interviewer does not appear too formal and too much like a newspaper reporter, he can in most cases "conversationalize" the person he is interviewing, i.e., make statements naturally related to the question, and so start the person on a voluntary stream of information that may reveal everything desired. The investigator should talk only enough to keep the other person talking. This method largely avoids the danger of asking leading questions. The market investigator will not be very successful in getting people to talk if he acts like the president of the company. His attitude should be one of an ordinary fellow who just works for the company, who is trying to get a general idea of things, and who needs lots of help. In fact, in some instances the more "dumb" he appears, the more information he will get. The trend of the conversation should not seem planned. It should be easy and natural. In order to get a person's confidence, the investigator must make some attempt to get on that person's level so that he or she is entirely at ease and willing to talk. The investigator should have a wide personality range that permits him to appear quite natural as he talks with various classes of people.

It Is Easier to Learn "What" than "Why." One should be aware of the general principle that it is usually much easier to find out *what* the consumer

does than to find out *why*. No one is conscious of all circumstances that led him to marry his wife. No housewife knows all conditions that caused her to buy for the first time or to continue to use a certain brand of baking powder. Even though one vividly remembers some of the conditions which surrounded the first purchase of a given product, he will hardly be able to analyze all conditions that influenced his choice or that caused him to continue using the product. This does not mean that consumers will not explain why they do things. They will. But they actually do not know the complete story and many of the reasons that they do give are the result of pride or rationalization. If price has dominated the choice of a product, the consumer may be reluctant to admit this even to himself and he may be still more reluctant to give this reason to anyone else. Even after a product has been bought, anyone can readily invent reasons for satisfying himself that he has made a wise choice, and it is these invented reasons that we sometimes get when we ask a consumer why he uses a certain product.

For example, take the following conversation between two housewives:

Mrs. A: What kind of baking powder do you use?

Mrs. B: X brand.

Mrs. A: Oh, I do too. I like it so much. It makes the texture of your cakes so fine.

Mrs. B: What's that? Fine texture? Oh, yes, of course—yes, it does make a fine-textured cake.

A little later the market investigator interviews Mrs. B. and she includes among her reasons for using X brand of baking powder, "It makes such fine-textured cake."

Even though reasons given by consumers to explain their attitude toward the product are so often invented reasons and so seldom complete, such information does shed some light on the marketing situation and, after careful evaluation, can be used for what it is worth.

What Does the Consumer Like to Brag About? Sometimes it is difficult even to find out *what* the consumer does. There are certain things that people like to brag about. Take the case of a manufacturer who was interested in the relative value of various magazines as advertising media for his product. He asked housewives, "To what magazines do you subscribe?" The housewife, anxious to reflect as much personal culture as possible, named over magazines which in her opinion one ought to read. And the manufacturer discovered, after an expenditure of a large amount of money, that the answers to this question were inaccurate and misleading.

What Does the Consumer Like to Soft Pedal? On the other hand, there are a great many things that the consumer is not very willing to talk about. One manufacturer, in trying to find out how housewives regarded special sales on his product, found that not all housewives who watched these special sales in order to save a few pennies would say that they did so. Another manufacturer of a quality food product found that it was not always easy to discover whether or not a housewife mixed his product with a cheaper product for household use.

These examples will suggest the difficulty of getting satisfactory answers to questions bearing directly on pride or class distinction, and will indicate why it is necessary to "conversationalize," rather than to ask direct questions.

What Can the Customer Remember? Ordinarily the consumer does not attempt to keep any record of his purchases. He may not be able to recall accurately how often he buys a product and in some instances he may even be vague as to the average quantity purchased at one time. Neither can the consumer be expected to recall whether or not a coupon, left several months before, has been redeemed or where he has seen a certain brand of product advertised. When the investigator asks questions which involve hazy recollections, consumers—even though their memory is faulty—usually make some attempt to give a definite answer, with the result that the investigator is in danger of recording unreliable information. As far as possible, a question should not be asked unless it can be answered in terms of easily recalled experiences.

Getting Information from the Retailer

Because the retailer occupies a key position in the distribution system, with frequent contact with both jobber and consumer, he is usually a valuable source of information.

In calls among retailers, one manufacturer found the sale of his product *shifting* from hardware stores to 5- and 10-cent stores. Still another found that the sale of his product was *spreading* to new kinds of dealers; that his product, heretofore sold only in grocery stores, was now enjoying an increasing volume in drug stores.

The retail store is the only place where manufacturers can find out what happens when consumer buying habits and retailer selling habits come together on the same stage and play their parts in the story of actual sales.

Following is an example of such a study in which a number of investigators each spent a day in a grocery store recording in shorthand the action and dialogue. Part of one report will be given merely to illustrate this method of getting information and to suggest its possibilities.

Grocery Stories

Apr. 2, 1930, 9:00 a.m. *A Consumer store located at the corner of Kimbark and 55th Streets, Chicago, Illinois. It is a clear, bright day. The woman manager, Mrs. Kohn, and the clerk who assists her, also a woman, are taking the monthly inventory. The store has one long counter on the left as you enter. There are shelves all around—all those except the one behind the counter easily accessible to the customer. The store has a neat, clean appearance, and everything is marked in some way to show the price. There are large ads at the top of the back and side shelves, advertising Consumer's 100 per cent Whole Wheat Bread, Hart Canned Foods, Gold Medal Coffee and Tea, Sandwich Bread, and Consumer's Best Eggs.*

Enter a middle-aged woman. They exchange comments on the subject of the customer's health, which seems to be failing.

Woman: One pound of Jelke's and one of good butter. Is that corned beef on sale today?

Clerk: Yes. (*Puts up some bulk corned beef.*)

Woman: One can of corn. (*Clerk gets White Cloud brand.*)

Old man enters.

Clerk: Yes, sir.

Man: A half-dozen fresh country eggs. No fooling, no city eggs. now.

Clerk: I just went out in the country to get them.

Man: A package of Uneeda Biscuit. (National Biscuit salesman finds out what I am doing—he has come in for order—and asks how many people have come in to ask for Uneeda Biscuit. I have only one. The clerk says that that particular man does not eat anything but crackers—no bread—so he is a good customer for Uneeda Biscuit.)

Enter man with little boy. He has a list of articles to be purchased.

Clerk: Good morning.

Man: Hello. A loaf of bread, please—large loaf. (Gets Better Bread, Consumer's brand—the only one they handle.) A dozen eggs—Best eggs Consumer's brand), a can of peaches.

Clerk: You want a large can, don't you?

Man: Yes, I want a large can. (Clerk gets him Hart brand.) And two bunches carrots, three cans vegetable soup. (Clerk gets Campbell's soup, the only kind on shelf.) Package of salted crackers.

Clerk: Twelve-cent package?

Man: Yes. (Clerk gets National Biscuit brand.) That will be all, I guess. (They converse a little about the heavy snow of previous week, and then the customer leaves.)

Colored man comes in. He picks up a package of National Biscuit cookies.

Man: Let me have some cheese. (Clerk gives him Kraft's.) Two cans of salmon. (Gets Wideawake brand. Customer looks at shelf, sees smaller cans, and asks about them.)

Clerk: No, those are 23 cents each. They are the red salmon. These (meaning the pink) are two for 23. (The customer seems satisfied.)

Man: Give me a few of those fig cookies.

Clerk: Ten cents worth?

Man: Yes.

Elderly woman enters the store.

Woman: I want some Dutch Cleanser.

Clerk: Kitchen Klenzer?

Woman: It's all the same, isn't it?

Clerk: It's 5½ cents or five for 27.

Woman: Give me three of them, I guess. (Studies a while.) Oh, I don't know, might as well take five. Let's see, I want some peas—a little can.

Clerk: You want two cans?

Woman: Yes. (Clerk gets Hart brand.) Then I want some prunes.

Clerk: A pound?

Woman: Yes.

Clerk: Do you want these in the little package (Sunsweet), or those in bulk?

Woman: The bulk. I guess that's all.

Clerk: Have you got bread enough?

Woman: Yes, we have bread. (Then picks up package of Leansweet bacon to put with order.)

Clerk: That is quite a full bag for you.

Woman: Uh-huh.

Clerk: Thank you.

Woman enters.

Woman: I want a small bag of flour.

Clerk: Better Bread? Ceresota?

Woman: Which is the best?

Clerk: The Better Bread is very good flour.

Woman: I will take Ceresota. Then a bag of salt—just a little bag. Three cans of Pet milk—large cans. How much are they?

Clerk: A quarter.

Woman: How much is pound tea?

Clerk: Eighty-five cents.

Woman: And half a pound is 43 cents. (*A half pound of Lipton's is put with her order by the clerk.*) All right, figure that up.

Clerk: Have you got butter, bread, eggs?

Woman: Well, I'll come out again.

Clerk: That's \$1.02.

And so on throughout the day.

What Kinds of Information Can Be Secured from the Retailer? A definition of primary kinds of information that can be secured from the retailer is offered as follows:

Trade Brand Recognition, Acceptance, or Preference

Definition. The kinds of products sold by the retailer under brand name, the brands carried by the dealer, and the degree of recognition, acceptance, or preference which the product studied, as well as any competing product, enjoys.

Sample questions:¹

1. To what extent is the type of product studied sold under brand name?
2. Competing brands carried by the dealer?
3. What brands occupy a major position in the retailer's mind?

Sales Volume

Definition. The amount of the product together with the amount of each competing product sold by the retailer.

Sample questions:

1. How many units of the product, and of each competing product, does the retailer sell in a week, a month, or a year?
2. What proportion of the product and of each competing product is sold at "special" prices?
3. What is the rate of turnover for the product among various classifications and types of retailers?

Advertising Media

Definition. Most effective media used by the company and by competitors in influencing the retailer.

Sample questions:

1. What method of store advertising seems to be most effective in influencing the retailer? (Store demonstrations, window displays, inside-store and counter displays, premium sales, etc.)
2. What media reach the retailer? (Trade papers, direct mail, radio, house organs, etc.)
3. Which consumer advertising media seem to influence retailers most favorably?

¹ These sample questions should be read as possible topics to be covered, not as direct questions to be used, in interviewing retailers.

Effects of Merchandising and Sales Service

Definition. Effects of the merchandising and sales service of the company and of competitors upon the retailer.

Sample questions:

1. What is the attitude of dealers toward the price, merchandising, and sales service offered by the company and by competitors?
2. Is there any feature of the retailer cooperative service offered by the company which is superior to competitors' service and which has effected good-will for the company?
3. Is there any feature of the retailer service offered by the company which is inferior to competitors' service and which has caused ill will for the company?

Trade Buying Habits

Definition. When, where, how often, in what quantities the retailer buys the product.

Sample questions:

1. How much of the product do different classes of retailers buy at one time?
2. To what extent can the time, frequency, or amount of purchase be influenced?
3. To what extent are retailers buying special deals from competitors?

Interviewing the Retailer. Even though the retailer is satisfied that the investigator is not trying to sell anything, he is still likely to be hedgy about giving out information.

But the hedgy retailer can sometimes be transformed into a most willing subject if the investigator will spend a few minutes, in the beginning, to tell him "all about" the survey. It is not difficult to compose a brief explanation that will get the retailer's interest. Once this interest is secured, the investigator must be very careful not to disturb it. Note taking during the interview usually causes the dealer to become more hedgy and less specific. The investigator should have the entire interview so well organized in his own mind that he is easily able, without taking notes, to retain the information at least until he has left the store, when he may record the interview in detail.

Do Not Expect the Retailer to Be a Statistician. When we consider that most retailers carry hundreds of different items on their shelves, it is easy to understand why they are seldom able to give offhand close estimates on the amount of sales, or in some instances, even a dependable statement of the rank of a given product as compared with the sales or rank of competing goods, unless the product being studied is an outstanding leader or an exclusive sales item.

The dealer is often incompetent to answer a question simply because the answer involves mental calculations. If a question is asked in such a way that the dealer is relieved of this mental arithmetic, he can often give the raw facts from which the interviewer may calculate the answer. Retailers are notably incompetent to estimate percentages. Take a simple illustration. Suppose one wants to know the approximate percentage of business enjoyed

by X brand canned milk in a certain store. Instead of asking a dealer what per cent of canned milk sold is X brand, it might be better to ask, "How long does a case of X brand milk last you?" and then ask, "About how long does a case of Y brand last you?" Y, of course, is the competing brand to be compared. The investigator will know the *number* of cans and the *size* of the cans packed in a case of each brand, and after getting the approximate length of time a case of each lasts, he can easily calculate the approximate percentage of business enjoyed by each brand in that store. The important thing to note in this plan of questioning is that the investigator associates the answer to his question with a common dealer operation of opening or ordering a case of canned milk—an operation likely to be recalled easily by the retailer.

Getting Information from the Jobber

What Kinds of Information Can Be Secured from the Jobber? The use of the jobber as a source of information is largely restricted to possible information that he might be able to give concerning various types of retail outlets with which he deals, and his general attitude toward the merchandising, sales policies, and service of the company. Sometimes a jobber is able to give helpful information about the relative sales of competing products, but one should not expect the jobber to give any information about competitors that might be considered confidential. Because his sales records are seldom kept in a way that makes easy the tracing of shipments on an individual product, the jobber typically is not in position to give out ready information concerning rates of shipments of a product to various retail outlets.

Getting Lists of Retailers from the Jobber. A New England clock manufacturer, selling through jobbers and introducing a new clock, wanted the names of the retailers who handled his clocks so that he could use them as a source of market information. The jobbers, quite naturally, did not want to give the names of the retailers.

This clock company handled the problem by giving a ten-year guarantee with each clock. In order that the guarantee be effective, the purchase record had to be signed by the customer and dealer and returned to the general office. By this system, the names of actual users and dealers came in automatically.

The Standard Textile Products Company¹ wanted a list of painters and decorators to whom jobbers of Sanitas were selling the product, so that the company might distribute sample books directly to these painters and decorators and encourage the sale of the full line of patterns. When asked for their customer lists, the jobbers offered the following objections:

1. We would not trust anybody with our list of customers. We have tried that out with other manufacturers whose employees betrayed our confidence.
2. As we do not carry the full line, how are we going to execute orders for styles we do not carry in stock?
3. We prefer to send out sample books showing the styles we carry and have our name on the cover as we always have.
4. We want time to think it over; it does not sound practical.

¹ BEHRENS, J. WARREN, "How Sanitas Obtained Valuable Customer Lists from Wholesalers," *Printers' Ink Monthly*, March, 1928.

The company was able to meet these objections in a sufficient number of cases to secure customer lists from almost 50 per cent of its jobbers. Whenever a painter or decorator writes the Standard Textile Products Company, that inquiry is referred back to the jobber who furnished the name of the painter or decorator. And so the manufacturer gives evidence of his good faith with, and support of, the jobber.

Jobber Prejudices. Special interests of the jobber may interfere with a satisfactory interview unless they are taken into account by the investigator. In the first place, the jobber's interests largely revolve about those products for which he has an exclusive agency. Second, he is typically prejudiced in favor of those products which represent his most profitable accounts. Third, he often pushes his own private brands, and some statements made by him concerning these brands may have to be discounted.

Means for Gathering Market Information

The foregoing discussion implies the exclusive use of skilled investigators as a means for gathering information. There are, of course, other means such as unskilled investigators, company salesmen, and the mail questionnaire. But those who have had extensive experience in the study of markets would probably agree that one cannot hope to secure anything like an adequate picture of the marketing situation without the use of skilled investigators.

There are, of course, exceptional instances in which unskilled investigators may be used when the information to be secured is neither subtle nor difficult to get. In the periodic collection of standardized data, company salesmen may sometimes be used providing the data secured do not in any way involve the interests or the abilities of the salesmen.

Difficulties in Using the Mail Questionnaire. As far as the mail questionnaire is concerned, the following difficulties are encountered:

1. Only a relatively small percentage of questionnaires are returned, and those people who do not answer often have the information most useful to the marketing executive.

2. It is difficult in most cases to control the distribution of replies so that all important classes of people and geographical territories are adequately represented.

An experimental study¹ which illustrates a case of distorted market information is offered as follows:

A special house-to-house advertising program covering a number of cities had just been completed. In attempting to measure some of the results, a mail questionnaire was sent to a group of housewives in each city where the work was done. The percentage of questionnaires answered was high and the distribution of replies was good. The data were tabulated.

At this point most mail studies stop. Those who secure information by mail are usually well satisfied if 30 per cent or 40 per cent answer and if the replies are well distributed geographically. But even with these two requirements satisfied, three important questions remain unanswered.

¹ REILLY, WILLIAM J., "Checking up on Data Secured by Mail Questionnaires," *Printers' Ink*, p. 71, Dec. 23, 1926.

1. Who answered the mail questionnaire?
2. Who did not answer the mail questionnaire?
3. How accurate is the information given by those who did answer the questionnaire?

To sense the importance of the first two questions, it is only necessary to recall that the percentage of mail questionnaires answered is seldom as high as 50 per cent. In other words, over half of the people to whom the questionnaire is sent are not heard from.

The significance of the third question is obvious, for if the information given by those who do answer is inaccurate, it may become practically useless, depending upon the degree of inaccuracy.

In order to discover who answered our questionnaire and who failed to answer it, as well as to learn how accurate was the information given by those who did answer, we set out to get the facts, using the following method:

1. Copies were saved of the names and addresses of all persons to whom the mail questionnaire was sent.
2. Three of the cities in which the mail questionnaire was used were selected for the purpose of sample study.
3. Personal interviews were secured with those who had answered the mail questionnaire and what they answered in personal interview was compared with what they answered by mail. These personal interviews were so planned that the housewife did not feel conscious that the accuracy of her answers by mail was being questioned.
4. Personal interviews were secured with those who had not answered the mail questionnaire, in an attempt to discover what kind of people did not respond.

The more significant results of this investigation are as follows:

1. Of the housewives who answered the mail questionnaire, 92 per cent were found to be users of our product and only 8 per cent were non-users.
2. Of those housewives who did not answer our questionnaire, 40 per cent were found to be users of our product and 60 per cent were non-users.
3. Those who did answer the questionnaire gave information that was exceptionally accurate; in fact, only 15 per cent of the answers given in the mail questionnaire differed from those received in personal interviews, and the differences were so divided between favorable ones and unfavorable ones that they resulted in a balanced error which did not appreciably disturb results.

Because the information by mail was received almost entirely from regular users of the product, it was highly favorable and gave a distorted picture of the market as a whole. Furthermore, the mail information did not include useful suggestions such as were received in personal interview from non-users who had objections to the product.

IV. KEEPING IN CONTINUAL TOUCH WITH MAJOR FACTORS

A company's marketing situation is subject to continual change, and one must therefore provide for a periodic check-up on the behavior of factors which dominate that situation.

Keeping in Continual Touch with a Potential Market Factor. An automobile accessory manufacturer found, in studying the production figures in the automobile industry, that his sales were not increasing so fast as the total

production of automobiles. In attempting to get at some explanation, he separated the production figures into two groups. In group 1 he included the more expensive automobiles for which type A of his product was made;

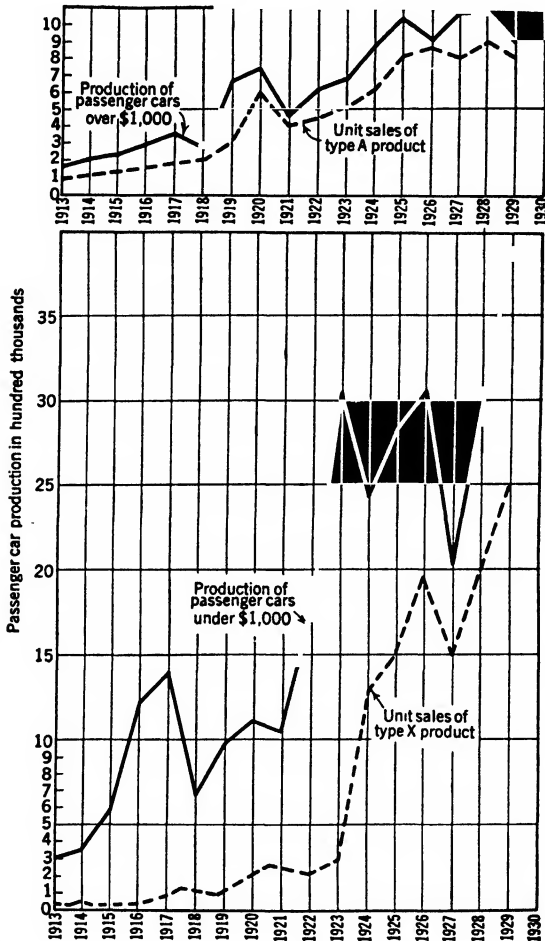


FIG. 3.—Unit sales of an automobile accessory compared with passenger-car production (United States and Canada 1913 to 1929).

in group 2 he included the less expensive automobiles for which type X was made. This analysis revealed that the sales of type A (made for more expensive automobiles) were keeping in step with the production of higher-priced

cars, but that the sales of type X (made for cheaper automobiles) were not increasing nearly so fast as the production of lower-priced cars. A field study showed that type A was much more acceptable to owners of expensive cars than type X was to owners of cheaper cars, and that competitors, with a lower-priced product, were getting the mass business among owners of lower-priced cars.

The manufacturer decided, therefore, to put out a new grade of his type X product in a lower-price range for owners of cheaper cars. Fig. 3 indicates the behavior of this manufacturer's sales in relation to automobile production, prior to and since 1923 when the change was made.

Keeping in Continual Touch with a Price Factor. The sale of a grocery product, let us call it Alto, slumped and the most important consumer

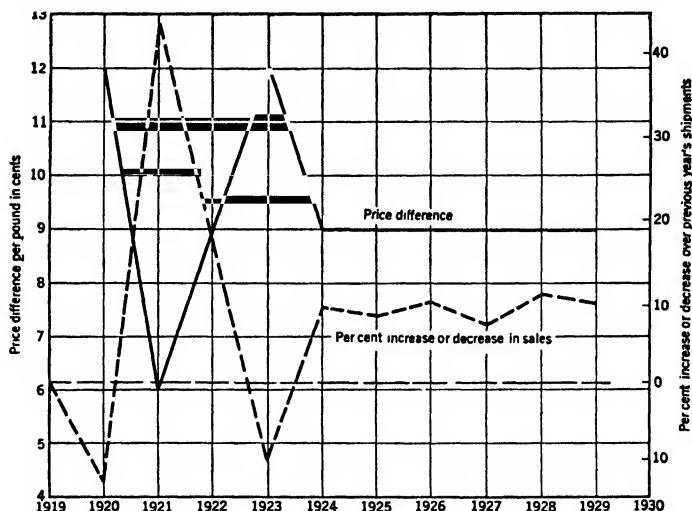


FIG. 4.—Price difference compared with sales increase or decrease.

objection was that "the price is too high." What did consumers mean? "Too high" for what? Did they object that Alto cost 50 cents? Not exactly. They *really* meant that they did not like to pay 50 cents when they could get another brand that served their purpose as well, or almost as well, for 35 cents. In other words, it was the *price difference* between Alto and competing brands to which housewives objected.

After examining the past sales of Alto and the price variation of Alto in comparison with competing brands, over a period of years, the manufacturer found (1) when the difference between the price of Alto and the price of competing brands was greatest, the sale of Alto suffered most, and (2) when the difference between the price of Alto and the price of competing brands was least, Alto enjoyed its largest gain in sales (see Fig. 4).

The final step in this study was to discover that point at which the price difference between Alto and competing brands became critical, *i.e.*, that point beyond which the price difference could not go if a satisfactory increase in volume was to be expected.

Thereafter, the company's level price policy was discarded and the price to the dealer was raised or lowered so that in turn the price to the consumer could keep in step with the critical price difference. Under this plan the *average* price received by the manufacturer for Alto over a period of years has been higher than it would have been under the old level price policy, and sales have experienced a more consistent and satisfactory rate of increase.

Keeping in Continual Touch with a Style Factor. A projected study for the manufacturer of a style product includes a periodic record of his sales in a number of retail stores in selected locations and a comparison of the sales

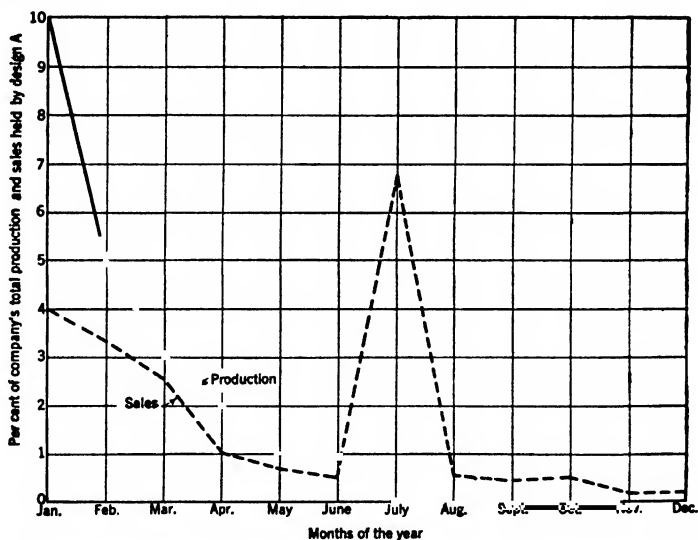


FIG. 5.—A comparison of design A's production and sales in selected locations.

of various designs with his production schedule on each design. Fig. 5, for example, shows that the company started out in January with a schedule providing for 10 per cent of its production assigned to design A. A check-up on retail sales in selected locations during the month of January revealed that design A was responsible for only 4 per cent of the total sales of the company in these retail outlets. The production schedule, therefore, was revised on February first so that only 5 per cent of production was assigned to design A.

A periodic check-up of retail sales during February, March, April, May, and June showed that design A was steadily declining in popularity. The production schedule on this design, therefore, was adjusted during these

months as is indicated in Fig. 5. Interviews with retailers during the month of June showed that they were so dissatisfied with excess stocks of design A and were so doubtful that they would be able to get rid of these stocks, that the company decided to discontinue production on design A, to give a special allowance on this particular design, and to encourage retailers to reduce their prices and to hold special sales during July.

Keeping in Touch with the Changing Consumer. All of us can recall instances where companies have interviewed (1) former customers to discover why their business was lost, (2) present customers to keep in touch with the performance or use of the product, and (3) users of competing products to find out why those competing goods were preferred. And it is extremely important to keep in touch with these groups. But markets are always on the march and ordinarily the potential customers with the longest life are the newcomers in the market. Furthermore, a manufacturer may encounter less opposition in getting business among these newcomers where buying habits are not yet molded and where prejudices are not yet established. Every market has its newcomers and it is wise for any manufacturer to keep in touch with the requirements of this new section of his market and to attempt to influence buying habits and prejudices which are in the making.

For example, excerpts from one periodic survey of the newlywed market, conducted for the general purpose of keeping in touch with the food problems of newlyweds and for the more specific purpose of observing their coffee-buying habits in the making, are offered as follows:

Newlywed Market¹

1. *Dimensions of the Newlywed Market.* The following table gives some idea of the dimensions of the newlywed market in the United States:

Year	Number of Marriages
1925	1,188,334
1926	1,202,574
1927	1,201,053
1928	1,182,497
1929	1,232,559

In other words, these five years have seen the advent of over 6,000,000 new purchasing agents into the food markets of the United States.

2. *What Are the Newlyweds' Biggest Food Problems?* According to the interviews secured, the biggest food problem of the newlywed housewife is *planning the meals*, so as to get a variety in the menu. Other important problems mentioned are knowing how much food to buy and prepare, recognizing quality, buying economically, and getting the right balance in food values.

3. *Previous Experience of Newlyweds in Buying and Preparing Food.* Fifty per cent of the newlyweds interviewed said that they had had practically no experience in buying or preparing food before they were married.

4. *Sources of Help on Food Problems.* When asked where they received most of their help on food problems, 64 per cent of the newlyweds interviewed said that they got considerable help from cook books. Some of the cook

¹ Newlyweds are defined as those who have been married less than two years.

books mentioned are published by manufacturers and others by independent food authorities. Fifty-five per cent said that they got help from their mothers. Forty-four per cent mentioned magazines as a source of help; 28 per cent mentioned friends; 26 per cent mentioned newspapers.

5. *Do Newlyweds Do Their Own Cooking?* This study was conducted among classes of people with moderate incomes ranging somewhere between \$1,500 and \$5,000 per year. Eighty-five per cent said they did their own cooking; 8 per cent did part of their own cooking, and the remaining 7 per cent said they did not do any of their own cooking.

Seventy-five per cent said that they liked to cook; 15 per cent said that they did not; 10 per cent seemed indifferent toward cooking.

6. *Where Does the Newlywed Buy Her Food?* There was a slight preference for the chain stores, among the newlyweds interviewed; 26 per cent said they did most of their buying at the chain stores; 24 per cent said they did most of their buying at independent grocers; 26 per cent said they shopped at both; and 4 per cent said they bought most of their food at cash-and-carry public markets. The remaining 20 per cent were divided among combinations of these three types of outlet.

Of those housewives who shop at chain grocery stores, 65 per cent mentioned "price" and 32 per cent mentioned "close to home" as a reason for doing so. Other important reasons given were "quality" and "variety."

Of those housewives who shop at independent grocers, 30 per cent mentioned "close to home," 21 per cent mentioned "quality," and 16 per cent mentioned "delivery service" as their reasons for doing so. Other important reasons given were "reliability," "personal interest," and "service."

7. *Coffee-buying Habits of the Newlywed.* Forty-nine per cent of the newlyweds interviewed said that they were influenced by their mothers' advice in selecting their first brand of coffee; 26 per cent said that they were influenced by advertising; 14 per cent said they were influenced by friends. Other influences mentioned were "mother-in-law," "dealer influence," "price," "blind choice," and "the package." In many cases, of course, more than one of these influences were mentioned as having some effect on the selection of their first brand of coffee.

Fifty-six per cent of the newlyweds interviewed still use the brand of coffee with which they started and 42 per cent have changed brands.

Of those housewives who changed brands of coffee, 38 per cent said they did so because they tired of, or became dissatisfied with, the first brand; 24 per cent gave "price" as a reason for changing brands. Other important reasons given were "friends' influence," "advertising," and "dealer influence."

Sales Territories Should Permit Comparison of Sales Results with Market Possibilities and Marketing Costs. But after all, the marketing manager cannot hope to keep in continual touch with the total effects of dominating factors unless he has some system of sales territories which permits safe periodic comparisons of sales results with market possibilities and marketing costs.

Without such a dependable running record of what is happening in various territories, he has no safe basis for determining where sales are good or where they are bad, and he has little chance to send his representative into unsatisfactory territories and to discover, before it is too late, what factors are responsible.

That manufacturers should organize their market records on the basis of trade territories rather than on the state basis is a principle that has been expressed over and over again in marketing literature. And in recent years a

number of helpful maps have been prepared to indicate roughly the dimensions of such retail-trade territories. But marketing managers have come to realize that no set of maps can safely be applied to all products. Meanwhile, lack of information about the *underlying rules* that govern the flow of retail trade¹ for *different products* has made it extremely difficult for anyone to devise a plan that will satisfy the peculiar requirements of each individual manufacturer.

The marketing manager does not need a set of general maps; he needs method that will help him to build up his own sales territories. He does not need some standardized plan devised on the outside and all ready to be superimposed upon his business; he needs method that will show him how to start with the experiences, aims, and conditions of his own company and to set up territories that will fit his own peculiar requirements. In attempting to use various standardized plans (all of which are different), he has failed so consistently to arrive at a satisfactory solution (because there is no such simple solution) that he is on the verge of losing confidence in the possibility of setting up dependable sales territories. But he is also prepared, after such disappointing experiences, to accept any method that he feels will help him to work out an individual solution to his own problem.

Into How Many Territories Should a Manufacturer Divide His Sales Map? The first question encountered in attempting to set up sales territories for an individual manufacturer with national distribution, is "Into how many territories should this manufacturer divide the United States?" The number of territories depends upon such factors as the product, consumer buying habits in relation to that product, the manufacturer's methods of distribution and market programs in various parts of the country, the amount of money which the manufacturer wishes to appropriate for such record keeping. It is conceivable that one hundred manufacturers of similar products may set up their territories in one hundred different ways.

In conclusion, there is no contention that a manufacturer cannot get along without a systematic plan for market analysis. Manufacturers are doing it.

The early steam engine could pull a train, but it used a lot of coal. Of course, the more efficient the engine, the more economically it can be run, and the more efficient the marketing organization, the more profitably it can be operated.

But meanwhile one can still run an inefficient engine if he has enough coal and one can continue to run an inefficient marketing organization if he has enough money. And that's just where the waste comes in.

¹ Related discussion on methods for building retail-sales territories: WILLIAM J. REILLY, "The Law of Retail Gravitation," 1930.

CHAPTER II

ADVERTISING¹

BY WILLIAM J. REILLY, *The William J. Reilly Company*

The word "advertising" has come to be associated primarily with the use of the commonly talked-of media such as magazines, newspapers, outdoor displays, radio. This association is unfortunate for a true definition of advertising implies no such restrictions. The Latin *advertere* means "to turn to," and "to advertise" a product or a service means to turn people toward it.

No manufacturer is interested in advertising *per se*. He is interested in its use only as a possible means for realizing his business objectives. In striving to attain these objectives, he has at his disposal a number of marketing instruments which he may want to consider in the light of their effect on his total business situation. One of these marketing instruments is advertising.

The major questions that any manufacturer faces in relation to advertising, then, are:

1. Considering my total business situation, can advertising be profitably used?
2. If so, what advertising media or methods are best adapted to my needs?

I. THE TOTAL SITUATION APPROACH TO ADVERTISING

Until recently we have been thinking of the manufacturer's total business situation as comprising two main jobs; first, production and, second, distribution. And the manufacturer could think that way with little risk at a time when he needed only to make a product according to his own ideas and then distribute it to a virgin and uncritical market.

But now that markets have become cultivated and competitive, that consumers have become discriminating, and that production has begun to catch up with, and in some cases surpass, the requirements of consumption, it has become necessary for us to change our order of thinking. We must now begin by consulting the consumer. Not until we know what the consumer wants is it possible to reduce to a minimum the speculative factors in production.

Even after the goods are produced, we can no longer use the word "distribution" to describe adequately the kind of job faced in attempting to market goods. Many are competing for the consumer dollar and if any manufacturer

¹ This brief treatment of a large subject is prepared not for the advertising technician but rather for the business man who may want to consider the use of advertising.

is to get his coveted share of the business he must devise methods for influencing and controlling the consumption of his particular product.

As a result of these recent changes, any redefinition of the manufacturer's job might well include three main functions:

1. To study the market for his particular product and to find out what kind of product the consumer wants or will want when told about it.
2. To produce that kind of product.
3. To market his product—guided by continuing market studies that help him to influence and control the consumption of that product.

Some of these points are not new. In fact, they have been much discussed within the past few years. But they have not yet found their way into general practice. Manufacturers have been so used to thinking "production and distribution" that it is still quite common for them to make a product on the assumption that there are good reasons why consumers should want it. How much sounder it is to find out first what the consumer wants, or can be made

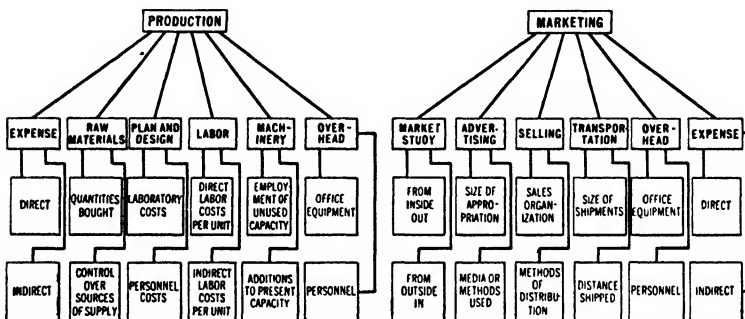


FIG. 1.—Various phases of the total business situation the costs of which may be affected by advertising.

to want, and how much easier to write effective advertising copy if a product is designed from consumer specifications. Furthermore, if consumer wants are discovered first, the product itself is more likely to measure up to what advertising would like to claim for it.

Whatever place advertising has in the total business situation, it is connected with the job of influencing or controlling consumption—and, as we shall see, even then advertising is only one of a number of marketing instruments that might be used to gain such influence or control.

However, before we discuss the use of advertising, or the use of any other instrument, to stimulate a business, we should arrive at some understanding of the effects that such a stimulus might have upon the total business situation at various stages in the development of a business. (See Fig. 1.)

Effects of Volume Increases. One idea often accepted without sufficient question is the popular belief that any business stimulus, that increases volume, automatically effects economies all along the line from the purchase

of raw materials to the final distribution of goods. And so it is frequently claimed that, whenever advertising increases volume, economies invariably follow. But this notion should not be too readily approved as applicable to all cases.

It is scarcely necessary to emphasize that there may be, in the case of any individual manufacturer, many ways of getting an increase in volume; and that the source and the nature of volume increase has much to do with the effects that such increase will have upon various costs of production and marketing and consequently upon profits.

Seeking Profitable Increases in Volume. Any manufacturer is interested in discovering what periods, what products, and what territories promise the most profitable increases.

In the first place, a study of production costs may show that an increase during peak months of the year or peak years in the business cycle would require additions to plant and machinery—additions that would really intensify his problem of unused capacity during off-peak seasons—while any increase in trough months of the year or in times of business depression would be very profitable indeed.

In the second place, a study of the present and potential market, the trend in the market, and the unit profit on each of his products, should clearly indicate which one or more of these products deserve to be pushed.

Third, an analysis of the costs of doing business, the competitive resistances, and the size of the market in each territory should help him to select, for special development, those territories which offer the most promising possibilities.

A Method for Recording Effects of Volume Increase on Costs and Profits. Method is usually about as popular as the neighbor's dog. It is likely to get kicked out without a hearing. We are quite anxious to throw aside, as unimportant, any method with which we are not familiar and the common reason for doing so is: My case is different. But after we become familiar with a method, we begin to realize its importance and to see that the method can be applied to a wide variety of cases. Even before our first grade in school we knew that two apples and two apples were four apples. But when we were first taught that thirteen plus twenty-six equals thirty-nine, it was difficult for us to see the importance of learning that. We wanted to know: thirty-nine what? Only after we became thoroughly familiar with methods for addition did we begin to understand that thirteen plus twenty-six equals thirty-nine of anything—that methods for addition have nothing to do with subject matter.

Similarly, the suggested plan which we are about to offer is merely a method for arriving at profits and for presenting this situation in graphic form so that it can be easily grasped. Any manufacturer can apply this method to his own business regardless of the nature of the items that he includes in his budget and regardless of the manner of their increase or decrease at different periods in the volume development of his business.

The case of John A. Manufacturer will be used merely to demonstrate the method for recording the effects of increasing volumes upon costs and profits.

John A. Manufacturer's Production Costs. John A.'s production costs are charted in Fig. 2. When his business was small he had only one

battery of machines and, as he gradually attained a sales volume that permitted him to run this battery of machines at full capacity, his unit production costs gradually declined from 50 to 40 cents. But a slight additional volume made it necessary for him to add another battery of machines. Each abrupt vertical rise at the left of the production curve indicates a point at which he added a new battery. We see on the chart that these sharp increases in unit costs became smaller with the addition of each group of machines. For although the actual amount of money involved in each battery was approximately the same, the expense of each addition to machinery became smaller in relation to the entire production cost as the number of machines increased, until finally the expense of adding another was such a small part of the whole production cost that the fluctuations in the curve resulting from such additions disappear on a graph of this scale.

The gradual decline in John A.'s unit production costs in the later stages of rising volumes was largely due to (1) his increasing purchasing power which enabled him to buy raw materials at lower prices, (2) the stabilization of his

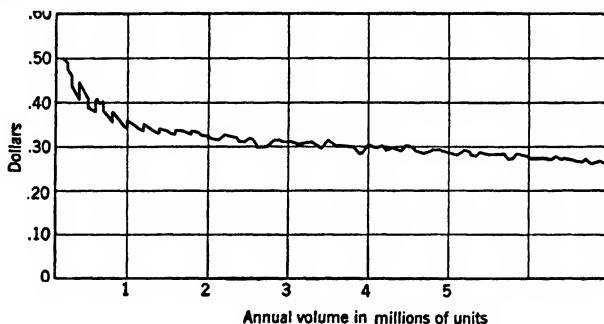


FIG. 2.—Production cost per unit.

production schedules which permitted lower labor turnover, (3) the standardization of his product which reduced his costs of planning and design, and (4) the economies effected by an efficiency supervisor who reclaimed and reused materials that had previously been wasted and who also made a number of reductions in overhead items.

John A.'s Marketing Costs. Now let us look at John A.'s curve of marketing costs (see Fig. 3). In the very early stages of his business he sold all of his product to those who called at his place of business and to retail outlets within a few miles. His delivery costs were very low. He had no sales force; no advertising appropriation. Then he attempted to build his volume by extending operations into new territories. Now for the first time he needed a sales force. He included an advertising appropriation in his budget. His delivery costs increased. His total marketing costs rose sharply to point A.

As he developed these new territories, economies in larger scale transportation, an increasing number of productive calls per day by salesmen, and lower

unit costs of advertising through the use of mass media whose circulations were coextensive with these new territories, were the main contributors to a reduction in marketing costs per unit to point *B*.

At the next stage of his business, John A. decided to open up a second group of territories. Because of the increase in sales force, advertising appropriation, delivery costs, and sales supervision, his total marketing costs went up to point *C*. But he found that four of these new territories were very rich and productive ones because (1) the population was increasing very fast, (2) competitors had not so thoroughly established themselves as they had in his former territories, and (3) the climatic conditions caused consumers to use the product in much larger quantities. The net result was that his marketing costs in these four territories were so low that the unit costs of marketing for his entire business declined to point *D*—lower than it had ever been since he began to open up new territories.

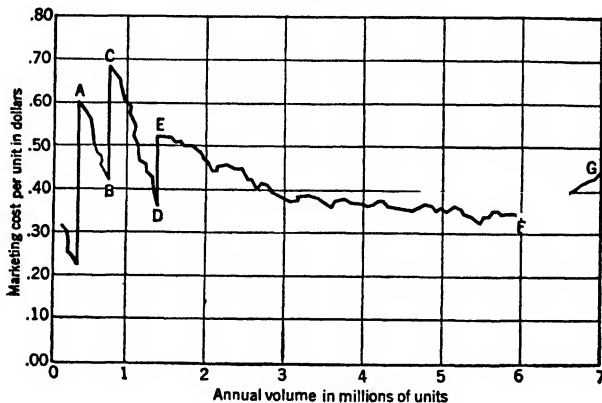


FIG. 3.—Marketing cost per unit.

John A. then began to feel that certain marketing economies could be effected if he would further extend the distribution of his product to cover the entire United States. This extension caused an immediate rise in marketing costs per unit to point *E* on the graph. These last territories to be opened up were not quite so fertile as some of the previous ones. He realized some decreasing costs, as these last territories were developed, but it took some time for the economies in his national marketing program to effect a reduction in unit costs. Gradually, however, he began to enjoy more effective cooperation of retailers and jobbers, to increase efficiency in the national sales organization, to make more resultful use of national advertising media, and to secure a higher turnover on his product, all of which contributed to a decline in marketing costs per unit to point *F*.

John A. was so encouraged that he went after still greater volume. His experience with advertising had been extremely favorable. Every time he

had increased appropriations, his volume grew. He now decided to increase advertising expenditures more than ever. He used house-to-house sampling. He increased his space in national magazines. He initiated local newspaper advertising, store demonstrations, and special premium sales among retailers.

Rising Marketing Costs and Declining Profits. Before long he began to realize that his marketing costs per unit had risen sharply to point G, that his profits were dwindling, that he was getting lots of volume but was not making much money. By charting his costs and profits as shown in Fig.

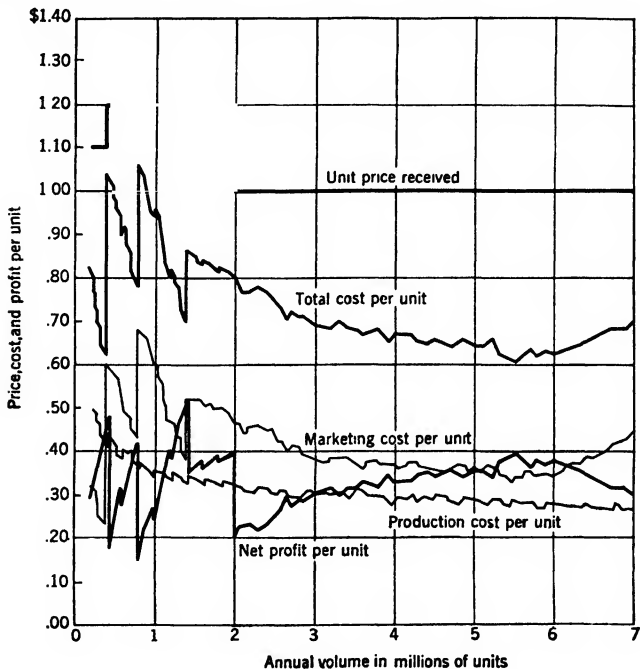


FIG. 4.—Price, cost, and profit per unit.

4, John A. found that when he increased his volume from 6,000,000 to 7,000,000 units, his profit per unit began to decline.

A Study of Costs from the Inside Out. In Fig. 4 the total cost curve is secured by adding production costs to marketing costs. The curve showing the price which John A. received for his product is explained as follows. When he operated locally he sold his product for \$1.10. When he decided to expand his territory he was forced to raise the price of his product to \$1.20 where it remained until his market had been expanded to a national scale and he found that competition with other products obliged him, and decreasing

total costs permitted him, to reduce the unit price of his product to \$1.00. The curve showing John A.'s net profits per unit at various stages in the development of volume is secured by subtracting total cost per unit from the unit price received. This net profit curve shows wide fluctuations in the early stages of volume resulting from the wide fluctuations in costs of production and marketing. After he began to distribute his product on a national basis, his net profits per unit gradually rose with decreasing costs per unit until that point was reached in the development of volume where the resistance of the market began to narrow the profit margin.

Companion Fig. 5 (derived by multiplying the number of units sold by the net profit per unit) shows John A.'s volume of profit at various stages in

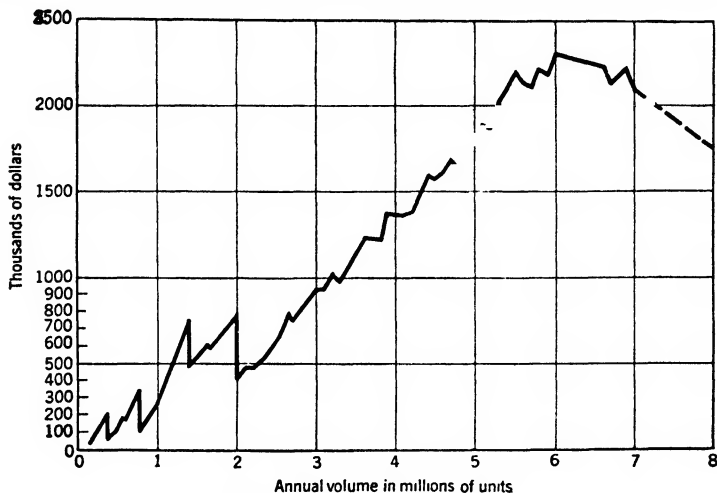


FIG. 5.—Total net profits.

the development of sales volume. It is evident that he enjoyed the largest volume of net profit when 6,000,000 units were reached.

A Study of Causes from the Outside In. John A. then studied his business further. He initiated a field investigation. He discovered that one of his competitors was imitating his advertising methods; that he was getting new business from this competitor who, in turn, was following up with similar methods and taking some business away from John A. It was clear that he and his competitor were spending a lot of money exchanging business, but neither was really getting anywhere. John A. had started the whole thing. He had reason to believe that his competitor would stop this extensive raiding if he would, so he decided to "stay in his own backyard." He realized, a little late to be sure, that the 6,000,000-unit mark was, for the time being at least, the volume on which he could make the greatest profit.

This case of John A. Manufacturer is sufficient to demonstrate that the stimulation of any business should be studied in relation to the total business situation, that various cost and income items are dynamic in their behavior, that profits are vitally affected by changing relations among these items with the growth in volume, and that it is necessary to keep in continual touch with these changing relations.

After anticipating some of the more important effects that volume increases from various sources might have upon his costs and profits, any manufacturer is in a more intelligent position to determine what kind of increase promises to be profitable and to consider what marketing instruments might best be employed to secure that increase.

Considering Various Marketing Instruments. In attempting to secure profitable increases, the manufacturer has at his disposal five main marketing instruments:

1. The product itself.
2. The availability of the product.
3. The price of the product.
4. Advertising.
5. Personal selling.

To begin with, let us avoid any possible impression that the stimulation of a business necessarily involves the use of only one or two marketing instruments. In any given case, all are likely to be involved, but with varying degrees of emphasis. There are those close to advertising who in their approach to this problem are likely to be too easily persuaded that advertising is the dominating force in most market situations. As we shall see this is not so often the case. The cases which follow will at least intimate the type of situation that requires primary emphasis upon each of the various marketing instruments available.

The Product Itself. There are a number of situations in which the product itself deserves primary emphasis in attempting to stimulate a business.

A manufacturer of a machine for factory use found in interviewing superintendents of factories where his machines were discontinued, that they had been replaced by those of a competitor because the competitor's machine was equipped with a device for saving part of the raw material which previously went to waste. This information led the manufacturer to add this device to his machine.

Another manufacturer found that he could produce staple goods in off-peak periods. In this case, staple merchandise was an important instrument in gaining new volume.

There are numerous cases where a manufacturer has stimulated his business merely by changing the packaging of his product. For example, a manufacturer of a beverage secured a substantial increase in sales by modernizing the appearance of his bottle and changing its shape. He also reduced its height to that of an ordinary milk bottle so that it could more conveniently be put into an icebox in an upright position.

A cooperative association of raisin growers stimulated their business by adding a small-sized package.

Such package and size advantages, however, are usually temporary. Soon after one manufacturer makes an important change in packaging,

competitors usually adopt a similar improvement. As a rule no one company possesses a monopoly on brains or patent privileges. The manufacturer, therefore, finds it increasingly difficult to maintain exclusive advantages in the product itself and in recent years he has been forced more and more to consider the use of other marketing instruments as a basis for whatever advantages he may hope to secure.

Availability of the Product. It is commonly agreed that the sale of any product is influenced by its degree of availability. But there are situations in which availability may be the dominant marketing instrument in increasing sales. For instance, availability alone may greatly influence the sale of a product for which there is an elastic demand—a product like apples. Then, too, in selling X brand of gasoline (which is one of a group of readily acceptable brands) primary emphasis was found to rest upon the distribution of pumps rather than upon price, product, advertising, or personal selling.

A manufacturer of a drug specialty increased his volume merely by making his product available in self-service grocery stores. It is easy to recall many recent cases where volume increases have been secured by extending the distribution of products into new types of outlets or into better located outlets.

Price of the Product. While price is one of the marketing instruments that might be employed to stimulate a business, yet its use must be approached with extraordinary caution. It is easy enough to reduce prices to meet a temporary situation, but it may be very difficult later to bring them back to a satisfactory level. The use of price concessions is more likely to involve unanticipated and unwelcome developments than the use of any other single marketing instrument.

All of us can think of examples in which price has been used to meet a market situation. It is not uncommon for competitors to offer larger discounts and allowances and for a manufacturer to meet competitive terms. There are many instances where manufacturers have reduced their price on the presumption that they would secure a sufficient additional volume to compensate the reduction.

Only the exceptional manufacturer can hope to enjoy sustained "cost" advantages over competitors. Yet price¹ can sometimes be used in skilled hands as a strategic marketing instrument for increasing profits. Any example, however, that might be offered in relation to the use of price as an instrument would necessarily involve a prolonged discussion of far-reaching implications—the kind of discussion that is not permitted in the brief reference to price that is made in this treatment.

Advertising and Personal Selling. The fewer market advantages a manufacturer enjoys in relation to the product itself, the availability of the product, or to its price, the more emphasis he needs to place upon advertising or personal selling, or both, in attempting to sell his product. Advertising and personal selling are so closely related in function that the consideration of one usually involves the other. Although the function of both is to inform and

¹ After all, the price of a product may not be nearly so significant as the difference between the price of that product and the price of competing products (see Chap. I, pp. 32-33).

persuade so as to turn people toward a product, one cannot generalize about the extent to which either carries this persuasion toward the point of sale. There are extreme cases where either one or the other seems to do almost all of the work.

It is possible, however, to make one distinction between the two on the basis of method that is employed. Some may find it helpful to think of advertising as including all mass media or methods for communicating a given message to a large number of people, in contrast with personal selling which might be thought of as including any method designed to give each person individual attention by adapting the description or suggested use of the product to that person's special requirements.

How personal selling should supplement advertising under different circumstances is sometimes difficult to determine. True, there are clear-cut cases at both extremes. One manufacturer of steam shovels, for instance, places primary emphasis upon personal salesmanship. Advertising is used incidentally, merely to add prestige to the steam shovel salesman's calling card. On the other hand, a manufacturer of chewing gum, who distributes solely through jobbers and large retail organizations, places primary emphasis upon advertising. Whatever personal selling he employs is incidental.

Between these two extremes, however, are many products—not so easily classified.

A maker of mayonnaise dressing, because of the perishable nature of his product, has salesmen who periodically make a check-up among retailers. These salesmen are on a "Bill" and "Joe" basis with the retailer and personal service shares emphasis with consumer advertising.

The method for distributing a given product may have some bearing on whether the emphasis belongs on advertising or on personal selling. For example, one manufacturer of corn flakes, who sells his product in bulk to jobbers who, in turn, sell it under their own private brand, emphasizes personal selling, while another manufacturer of corn flakes, who packages and sells his product under his own brand name, emphasizes advertising.

The manner of selling the product to the consumer sometimes affects the relative emphasis upon advertising or selling. A manufacturer of household paint knows that a hardware merchant may be able to sell any one of a number of fairly well-known paints, providing he builds up a reputation for good advice on how to paint a breakfast room set or the kitchen wall or a second-hand automobile. This manufacturer, therefore, divides emphasis between personal selling to the retailer and consumer advertising.

A manufacturer of a machine part, realizing that his patents would soon expire, faced the problem of maintaining a hold on the business. He considered the possibility of reducing prices so that others might be discouraged from entering this business in competition with him. He found that, on the basis of his present volume, a price reduction (that would be of any consequence to the consumer) would reduce his income approximately a million dollars, and that the prospects of securing sufficient additional volume to compensate such a price reduction were not at all promising. Driven to another strategy, he elected, as an alternative, to maintain his price and to spend one-half million dollars in advertising. The net result was that, when

his patents expired, he had gained such a firmly entrenched priority in the field, that only one manufacturer attempted to compete with him. And this competitor found the market resistance so great that he met with very little success.

It would be a mistake for anyone to infer, however, that there are set rules to be followed in emphasizing various instruments or that any given marketing situation can be solved in only one way. In actual practice most cases are neither at one extreme nor at the other and there are any number of possible solutions, involving different combinations of advertising and selling, and involving a wide variety of emphasis on the use of other marketing instruments.

Brief as this reference to various marketing instruments has been, it should be sufficient to show that the intelligent use of advertising involves a thorough, fair-minded appraisal of all other marketing instruments.

This total situation approach to advertising, involving the study of profitable increases and the consideration of various marketing instruments, seems at first sight to be unduly complicated. But in actual practice, most of the information essential for the studying of these problems, can ordinarily be secured from a company's files, from trade associations, and from other readily available sources of information.

In any case, of course, the essentials should be secured however difficult they may be to get; the non-essentials are not wanted however easy they may be to get. Unfortunately, an ambitious but misdirected analyzer may spend an immense amount of time digging into phases of the business and getting large quantities of data that have no immediate connection with practical decisions to be made. And the more these non-essentials are elaborated, the more the essentials are clouded. This total situation approach to advertising, then, has for its main requirement an analyzer who has a sharp nose for essentials.

II. DEFINING THE ADVERTISING JOB

Whenever a manufacturer finds that advertising has a place in his marketing program, he immediately faces the necessity of defining the advertising job to be done, somewhat as follows:

1. What are the primary and secondary objectives of his advertising?
2. Whom does he want to influence?
3. What does he want to tell them?
4. What time limits are involved?
5. Which media should be used?
6. How much money is required?

The need for defining the advertising job is so extremely obvious that one is likely either to take for granted that he knows what he wants to do without going to the trouble of defining it, or to arrive at a hasty definition on the basis of assumed rather than known conditions.

Ordinarily, there is too much premature thinking about appropriations and media. The thinking usually starts with some arbitrarily¹ fixed amount

¹ One method in common practice for arriving at advertising appropriations is to use a certain percentage of sales, sometimes just because another company, apparently

of money to be spent on advertising. Certain media are thought of which can be bought in units so that the amount of space bought is equal to the amount of money to be spent. Premature appraisals and cost comparisons are made among various media. Obviously, one can neither appraise media for doing a job nor determine the amount of money required until he knows what that job is.

Steps to be taken in the study of any advertising situation, therefore, are developed in the following order:

- I. What are the primary and secondary objectives of the advertising?
 - A. To introduce a product?
 - B. To establish priority in a new market?
 - C. To change attitudes toward a product?
 - D. To encourage new uses of a product or to extend familiar uses?
 - E. To protect the market from competition?
- II. What groups of people must be influenced, directly and indirectly, in order to accomplish these objectives (the number, location, income, age, sex, occupation, or other characteristics of each)?
 - A. Present or potential users of the product?
 - B. Those who influence the present or potential use?
 - C. The distributive organization?
 - D. Company personnel?
- III. What is the message to be communicated to each of the above groups?
 - A. What should the general nature of the appeal be—logical, emotional, or both?
 - B. What is to be the specific content of the message—product uses, “reason why” copy, educational, mere statement of a word or phrase?
- IV. What time limits are involved *i.e.*, how quickly must our objectives be accomplished and what risks are we willing to assume for the sake of speed?
- V. Which media can be employed to perform this advertising job most effectively and most economically among each group to be reached?
 - A. General types of media?
 1. Newspapers—city, small-town, county, Sunday, daily, weekly?
 2. Magazines—general, class, farm?
 3. Outdoor—posters, painted or electric signs?
 4. Direct mail—letters, catalogues, specialties?
 5. Radio—spot, sectional, or national broadcasts?
 6. Car cards?
 7. Trade publications?
 8. Business publications?
 9. Package inserts, booklets, circulars, folders, house organs?
 10. House-to-house methods—sampling, couponing?
 11. Dealer cooperative methods—displays, demonstrations, part-paid advertising?

similar, spends about the same percentage of sales for advertising. A noticeable confusion exists, here, between general principle and individual plan of operation. It is all right to apply an advertising principle to companies which are not alike in all respects, but it may not be all right to apply the same plan of operation to those companies. As we shall see, no two advertising problems are exactly alike in all respects. Even if there were two businesses whose advertising problems were identical, it might be dangerous for one manufacturer to be guided by what another had done, *i.e.*, to assume that the other had solved the advertising problem in the best possible way.

12. Publicity—theatres, schools, plant tours?

13. Movies?

B. Specific plans for the use of any type of media?

1. Time of use—hour, day, week, month, season?

2. Extent of use—size, volume, and frequency permitted by various amounts of money?

VI. What appropriation is necessary to accomplish the objective?

No advertiser can ever study long enough or discover facts enough to reduce his advertising decisions to a certainty. There is always an element of speculation in attempting to forecast results, and assumptions must always be involved. But not many advertisers have gone as far as they might to reduce the element of chance in their assumptions.

Before satisfactory answers can be secured to some of the above questions, it is usually necessary to conduct an inquiry¹ in relation to the product itself, the market for the product, and the entire distributive system, employed in moving the product to the consumer.

The Advertising Objectives. Sometimes the objectives of advertising can be defined in a general way in advance without very much study. A manufacturer may have the general problem of introducing a product for the first time, of introducing his product to new users, of stimulating the use of his product among old users, or of protecting his market from competitors. But before he can make the definition of his objectives very specific, he is usually forced to conduct some kind of an inquiry among those groups of people whom he is attempting to influence either directly or indirectly. And in the process of such study he gets a clearer conception and definition of the characteristics of the various groups whom he wants to influence. In addition, he can get some indication of the resistance or acceptance that his product experiences among these various groups. And such information may be used as a guide in constructing the message which is likely to be most effective.

Ordinarily, it is much easier to discover the characteristics of those groups of people to be influenced than it is to determine what information about the product will prove most effective in turning these groups of people toward it. In preparing a message for potential consumers, it is easy enough to build up certain logical reasons why consumers *should* want to use a product, but logical reasons are not necessarily the most effective ones to be offered in advertising a product, for the consumer is not always motivated by reason. For example, one manufacturer changed the packaging of his product so that it would reach the housewife in an air-tight condition. In interviewing housewives and getting their attitude toward this new package, it was found that housewives did not talk about the fact that the new package was air-tight, but consistently used the word "sanitary" in describing their conception of the advantages of the new package. The word sanitary, therefore, assumed an important place in the advertisement of this new package.

Time Limitations. All advertising programs have some time limitations. Ordinarily, however, these limitations have come to be so commonplace (because we think in terms of days, weeks, months, or years) that we take them for granted. But in some cases, special time limitations may be

¹ See Chap. I on Market Research and Analysis.

important. For example, the manufacturer of seasonal, novelty, fad, or temporary-style merchandise is obliged to exploit his market within a limited time. Or the manufacturer selling a product whose patent rights will soon expire may be very much interested in getting all the profitable business he can, and in establishing his position in the market, before his patent privileges expire.

The Selection of Media. After a manufacturer has secured reliable information concerning the groups he wants to reach, what he wants to say to them, and how he wants to say it, the next question is what media can be employed to perform this advertising job most effectively and most economically, within the time limits involved.

Wherever assumptions are made, the selection of media *from that point* may be very logical and the quarrel is not with the logic that is employed as much as it is with the assumptions that are made to start with. These assumptions may have been accurate at one time. But unless one continually keeps in touch with changing conditions in the market and among media, his assumptions may soon become obsolete. Or the manufacturer may have been working on a certain group of assumptions for years without having sufficient facts to support any one of them.

The effective selection of media necessarily involves the use of experimental campaigns. And this subject is discussed later under the general head of measuring advertising effects. A preliminary appraisal of media, however, can usually be made in advance of trial campaigns.

Newspapers and Magazines. Whenever newspapers or magazines have been tentatively selected there are certain points which might be considered in attempting to arrive at an indication of the relative value of various media within a given classification.

It is very difficult in a brief statement to convey anything like a complete understanding of all the factors which underlie such an appraisal. But an outline of some of the more vital points that should be considered is offered as follows:

I. Characteristics of circulation.

A. Quantity of circulation, including an examination of:

1. The trend in the amount of circulation, and a study of the reasons for this trend.
2. Secondary readership.

B. Distribution of circulation, by locations.

C. Selectivity of circulation, the characteristics of readers, which correspond with characteristics of groups to be influenced, including such data as age, sex, intelligence, occupation, income, or ownership of real or personal property.

II. Costs.

A. The gross cost of an adequate schedule.

B. The page or line cost per unit of circulation.

C. The estimated percentage of "groups to be influenced" among the readers and the consequent costs of effective circulation.

III. The contents of the medium.

A. General character of editorial treatment.

B. Evidences of reader response to content.

- C. Harmony between editorial treatment and the proposed advertisement.
- D. The advertising content.
- IV. Life of the medium.
- V. Use of the medium in combination with other media.
 - A. The efficiency with which its circulation supplements that of other media which may also be used.
 - B. Advantages or disadvantages of any forced combinations involved.
- VI. The mechanical arrangement of the medium.
 - A. The visibility of various positions.
 - B. Printing and appearance.
- VII. The trade or merchandising influence or service of the medium.
 - A. Special or plus services of the publication that assist in promoting the sale of the product.
 - 1. Among retailers and wholesalers.
 - 2. Among consumers.

Trends in the quantity of circulation are sometimes important. In those cases where an unusual growth has been experienced, some study might be made of the method for obtaining this growth in an attempt to learn whether the outstanding merit of the medium is responsible or whether forced circulation methods have been used and, in any case, to find out how such conditions affect the value of the medium for the specific product at hand.

Any definition of selective circulation must be thought of in terms of the product itself. For instance, a circulation which might be considered good for advertising a soap product may conceivably be considered poor for advertising a radio. Selective circulation for any manufacturer is that circulation which reaches the people through whom he can do the most business. It not only varies widely for different advertisers, but it is likely to vary over a period of time for any single advertiser.

Some attempts have been made to measure the selectivity of various circulations by offering information about readers in relation to their age, sex, intelligence, occupation, income, and ownership of real or personal property such as homes, automobiles, telephones, radios. And although these general measures might be used to serve as rough guides, the most reliable measures for any given manufacturer are those which have some direct relation to the need for and purchase of that individual manufacturer's product.

Sometimes it is possible to determine quite closely what proportion of total circulation may be considered effective and, in these cases, it is possible to base advertising costs upon that portion of the circulation rather than upon total circulation.

For example, a manufacturer made a sample study of the subscribers of two newspapers and found that only about 20 per cent of the readers of one medium belonged in groups that he was attempting to reach, whereas something like 65 per cent of the readers of a second medium were in these groups. The second medium promised to be the more profitable one for him to use, even though the rates per thousand of circulation in both media were about the same.

An examination of editorial content should lead to the consideration of means of adapting the advertising message so that it is in harmony with the

editorial matter. In some cases, the manufacturer may detect unusual opportunity for "tuning in" his message.

In trying to appraise media, one caution is recommended, *i.e.*, it may be more dangerous than helpful for anyone to attempt to make comparisons among various media within a classification and then attempt to build up a rating of these various media that will be universally applicable. For each product offers a different combination of emphases in relation to the various points included in the previous outline. Whenever one attempts to weigh these various factors he should do so in relation to a specific product.

Then too, changing conditions in markets and in media require a periodic appraisal of all media used and no check list or formula for rating media can be used as a substitute for study.

Manufacturers have frequently considered that a magazine or newspaper which carries a large amount of advertising on products similar to their own is therefore an appropriate medium for them to use. It is sometimes difficult for a manufacturer to resist the temptation of going into a leading medium—just because the leaders are there and he likes to be classed among them. His case may be very different from the leaders in the field and even though it is not, the use of advertising media, even by large advertisers, is not yet based on sound study in a sufficiently high percentage of cases to warrant the general assumption that a medium is good just because others are using it.

If a manufacturer's study of media leads him into the use of a medium that is most used by competitors, all well and good. But it might be dangerous for him to assume that, because a medium is most used, it is the best one for him.

Outdoor Advertising. Similarly, if outdoor advertising has been tentatively selected, there are certain preliminary comparisons of various outdoor media on the basis of such points as:

1. The number of people who view the display.
2. The percentage of these who belong in groups to be influenced.
3. The manner in which they pass the location—by foot, auto, street car, train—and whether they pass in a rush or at leisure.
4. The extent to which the display is likely to dominate the location.
5. The flexibility in the possible use of various outdoor media in relation to time, place, and space.

Radio. Or if radio has been selected for a trial, various broadcasting stations may be given a preliminary appraisal on the basis of such points as:

1. Power of the station (in watts) and the consequent distance it can communicate a message.
2. Position on the dial.
3. Clearness of the channel.
4. Station hours of operation.
5. Station hours available.
6. Popularity of station among groups to be influenced.
7. Competition for attention furnished by other stations at any time under consideration.

The main purpose of these preliminary appraisals is to guide the selection of media or methods within a given classification that promise to be best within that class. The more that facts are used to support the definition of

the advertising job to be done, the more intelligently can media or methods be appraised and selected. And the more these appraisals and selections are followed up by measures of the effects of their use, the earlier this body of fact can be employed to contribute to the support of assumptions which must be made every time a medium is selected. Without facts to help support an unbiased selection, one is much more likely to be susceptible to pressure exerted by publishers and other space sellers who, after all, are, in some degree at least, motivated by their own interests.

To sum up, there is no contention that the selection of efficient media or methods can be reduced to a certainty. But it is readily acceptable that the more facts we put into, and the more opinion we take out of, the basis upon which our assumptions rest, the higher our batting average of successful selections should be. This program involves the whole question of the measurement of advertising effects.

III. THE MEASUREMENT OF ADVERTISING EFFECTS

It would be difficult to select a subject more controversial than the measurement of advertising effects. Some flatly say "It can't be done." Others contend that it can be done and that it is possible to take the guesswork out of advertising. But while the two sides have been debating, a few have been quietly engaged in impartial study. And in the last ten years, some progress has been made by these few who have been experimenting with actual situations.

While it is true that some advertising methods lend themselves to measurement more fully than others, the author has not yet encountered any use of advertising that does not lend itself to measurement of *some* significant effects *provided* the job of measurement is approached by the experimental method.

Those who say "It can't be done" contend that the effects of advertising are so mixed up with the effects of all other kinds of sales efforts that it is impossible to isolate them. But throughout the development of all science, the favorite refuge of those who have not known how to do a thing has been, "It can't be done." In any field of learning it is only since men have evolved methods for measuring, summarizing, and recording their experiences that we have derived much benefit from these experiences. And one of the main reasons why we have benefited so little from the rich advertising experience that is behind us, is that few methods have been developed for measuring the results of this experience.

Not many years back, manufacturers were spending their energies opening up new and virgin markets. Under such conditions, the results of their advertising were usually so clear that there was little need to apply litmus paper tests and microscopic examinations. But in the present era these manufacturers face a different marketing situation in which satisfactory results of advertising are less likely to be assured in the absence of intelligent planning—planning that must be guided by the close measurement of advertising experience.

Any advertiser knows what he spends for advertising. And if these expenditures produce any tangible effects, those effects find their way into the profit and loss statement. But the effects of other work are in the profit and

loss statement too. And how are you going to unscramble them? Granted, it is difficult to do. But so is measuring the effects of various foods and stimulants upon the human system. What is more complex than untangling causes and effects in the human system? But medical science is gradually solving such complicated problems. We couldn't measure electricity until instruments were devised for doing so. And even now we don't know what electricity is. But we can measure the effects. Scientists have devised instruments and set up laboratory experiments on all kinds of problems solely because most conditions are scrambled, and in order to measure the effects of any one of them it is absolutely necessary to set up some experiments in which an attempt is made to hold all other factors constant and comparable, while the effects of any given factor are being measured. Few have deliberately attempted to set up experimental studies and thereby separate the advertising elements which so many dismiss as immeasurable. But some such experiments have been set up. And whenever they have been set up by one who has made intelligent use of governing principles, significant measurements have been obtained.

Although cases that permit the removal of all guesswork are very rare in advertising, yet the cases in which sufficient evidence of productiveness can be secured to serve as a dependable basis for judgments are numerous enough.

There is some literature¹ on the measurement of advertising effect. For the most part, however, it falls short. It deals with inquiries, attitudes, opinions, and then stops. Not until measures of advertising results are scientifically tied up with the costs of advertising and with actual sales and profits, do they graduate from the stage of academic interest into that of practical value.

That part of the literature which deals with "inside" laboratory tests is particularly difficult to apply. After all, a manufacturer's laboratory for testing his advertising is his market. That is where advertising effects are produced. That is where method should be developed.

Practical methods that have actually been developed in the field for measuring advertising effects will now be presented under three general headings:

1. The measurement of the effects of house-to-house advertising.
2. The measurement of the effects of special dealer advertising.
3. The measurement of the effects of mass media advertising.

Measuring the Effects of House-to-house Advertising. *Selling vs. Sampling.* The manufacturer of a food product employed two house-to-house methods for advertising his product. The advertising manager thought that "House-to-house selling is the most effective way of advertising the product among non-users simply because the purpose of the advertising is to encourage consumers to try the product and you can't get people to give a product a fair trial unless they pay something for it." The sales manager, however,

¹For bibliographies on the subject see MABEL GRAGG, "Testing Advertising," pp. 111-123, *Harvard Business Review*, October, 1930; DONALD R. G. COWAN, "The Measurement of Advertising Effect," pp. 12-13, *Bulletin of the Advertising Federation of America*, 1930; WILLIAM J. REILLY, "Marketing Investigations," pp. 122-127, The Ronald Press Company, 1929.

felt that "If you *give* a person a full-sized package of a product they'll be sufficiently grateful to you to give it a fair trial."

Four cities were selected—two comparable¹ cities in each of two territories. In each territory, city A was used for house-to-house sampling and comparable city B for house-to-house selling. In each territory, a composite of all remaining cities was used for purposes of control. In each case the house-to-house crews were asked to save the addresses of those homes into which they had succeeded in getting a package of the product. Two months after the work was completed in each city, those who received a trial package of the product were interviewed in order to learn (1) whether they had been using the product before or whether they were non-users before they got the trial package; (2) whether they liked or disliked the product; and (3) whether those who were non-users when the work was done had used the trial package and had bought² a package of the product in the regular way at the grocery store.

One year later the non-users who had bought were interviewed in order to learn whether or not they still used the product and about how much they used per month.

In following up these two methods in the field, *gratitude* was found to be the key word in expressing the attitude of housewives who had been given a trial package of the product from the advertising crew. The actual testimony of housewives indicated that many non-users gave the product a fair trial because they had accepted a full-size trial package and, in the process of trial, they had become converted. House-to-house sampling reached non-users *intensively*.

On the other hand, house-to-house selling reached only those comparatively few non-users who were willing to buy the product at the time from the advertising crew.

The main results³ of these experimental measurements are offered in Table I.

¹ In selecting comparable locations for the experimental study of any product, it is necessary to exercise particular care in choosing locations that are alike from the standpoint of any known factors that affect the sale of that product. In any given case, there are a large number of such factors, including those in relation to consumers, to competition, to previous advertising, to methods of distribution, to efficiency of the distributive organization, and to general business conditions. In the study of markets, it is impossible to choose two locations exactly alike, but one can select locations which are sufficiently alike (from the standpoint of the known factors that affect the sale of that product) to be considered comparable. Then if any differences in advertising results are secured, one can be reasonably sure that these differences are due to variations in advertising methods rather than to differences in the trial market. In the study of this particular product, we had found, through earlier studies, that the main factors affecting the resistance of the market, were: the percentage of the total population who do not use the product, the nature and price of competing products, and the type of home.

² Difficult information to get. The technique for getting it is discussed in Chapter I, p. 22, *The Difference between Answers and Facts*.

³ The behavior of sales in control locations was sufficiently level that no correction factor had to be introduced. If sales in control locations had increased or decreased appreciably during this experimental work, it would have been necessary to subtract the increase or add the decrease in arriving at the results attributable to house-to-house advertising.

But the study could not stop with a measurement of results. Costs had to be taken into account. Before judgment could be passed on either method, costs of securing a new customer by each had to be calculated.

In this case (see Table II) it cost the manufacturer 40 cents to deliver a trial package of his product to the housewife by the house-to-house sampling method in city A, territory 1. Seventy-five per cent of all families to whom a trial package was given, were non-users. By dividing 75 per cent into 40 cents we get 53 cents as the cost per non-user who received a trial package. Only 22 per cent of all those families receiving the trial package were "non-users who later bought a package of the product in the regular way at the grocer's." Dividing 22 per cent into 40 cents gives the "cost per non-user who bought at the grocer's"—\$1.82.

TABLE I.—STATEMENT OF RESULTS

Location and method	Per cent of the total housewives receiving the trial package who were:		
	Non-users	Non-users and later bought at the grocer's	Non-users, who bought at the grocer's, and who still used the product one year later
Territory 1			
House-to-house sampling in city A.	75.0	22.0	13.0
House-to-house selling in city B.	20.0	5.2	3.1
Territory 2			
House-to-house sampling in city A.	84.0	26.0	16.0
House-to-house selling in city B.	18.0	5.0	2.9

One year later, when these non-users who bought were interviewed to find out how many of them still used the product, it was found that 13 per cent of the total families receiving the trial package could now be classified as "non-users who later bought at the grocer's and who still used the product one year later." In other words, 13 per cent of the total could be considered as new users secured, and dividing 13 per cent into 40 cents gives us a cost of \$3.08 per new user secured, by house-to-house sampling method in city A, territory 1.

Similarly the cost per new user secured¹ was calculated for the other three cities included in our study, shown in Table II.

¹ The use of such cost comparison is not without its assumptions and limitations. In the first place, these cost figures are based only on measured results. Many immeasurables may escape our attention. For instance, a newly acquired customer may not

TABLE II.—STATEMENT OF RESULTS AND COSTS

Location and method	Cost per housewife who received a trial package	Per cent of total housewives receiving the trial package who were non-users	Cost per non-user who received a trial package	Per cent of total housewives receiving the trial package who were non-users and later bought at the grocer's	Cost per non-user who bought at grocer's	Per cent of total housewives receiving the trial package who were non-users, who bought at the grocer's, and who still used the product one year later	Cost per non-user who bought at grocer's and who still used the product one year later
Territory 1							
House-to-house sampling in city A.....	\$0.40	75.0	\$0.53	22.0	\$ 1.82	13.0	\$ 3.08
House-to-house selling in city B.....	0.58	20.0	2.90	5.2	11.15	3.1	18.70
Territory 2							
House-to-house sampling in city A.....	0.38	84.0	0.45	26.0	1.46	16.0	2.37
House-to-house selling in city B.....	0.62	18.0	3.44	5.0	12.40	2.9	21.40

The information given in Table II is sufficient to show that the house-to-house sampling method was a much more economical one than house-to-house selling. But, before house-to-house sampling could be passed upon as profitable, some approximation of what a new user was worth had to be developed.

Calculating on the basis of (1) a net profit¹ of 5 cents per package, (2) an average consumption of two packages² a month for a new user, the promised profit per new user was about \$1.20 a year.

In this case three years was considered as a reasonable time to wait before the profit secured from a new user's business would pay for the cost of securing this new user. Net profit, on new business then, would be realized three years after the advertising work was done. The estimated worth³ of a new user, therefore, was set at \$3.60.

With this estimated worth of \$3.60 per new user, the sampling method for securing new users at a cost of \$3.08 in city A, territory 1, and at a cost of \$2.37 in city A, territory 2 (see Table II), promised to be profitable. But the fact that this house-to-house sampling method promised to be profitable in one or two territories did not prove that it would be in other territories.

The Effect of Various Factors on the Cost of Sampling. Even though the cost per family reached in two cities is approximately the same, it is dangerous to assume that the cost per new user secured will necessarily be the same in those two cities. For example, in cities where the percentage of regular users of the product was high, the cost of reaching non-users tended to become rather high. Similarly, in weak territories where the percentage of regular users was low, the cost of reaching non-users by the sampling method tended to become relatively low. All of which suggested the obvious conclusion that in strong territories, the per cent of regular users reached can become so high and the consequent costs of reaching non-users can so increase as to make the work unprofitable. This immediately provoked the question of how strong a territory must be before sampling costs become excessive.

In an attempt to answer this question let us refer to Fig. 6. This exhibit shows the point at which the cost of securing a new user by house-to-house sampling began to exceed the estimated worth per new user. Along the base of the exhibit we have a scale which shows the per cent of total housewives who are regular users of the product at various stages in the

only use the product but also may influence others to use it or tend to prevent old users from discontinuing the use of the product. On the other hand, some who tried the product and disliked it might influence others against the product. The assumption in this case is that advertising methods which compare favorably on the basis of measured results might be expected to compare favorably on the basis of results not measured. Because all costs are necessarily allocated to those results which are measured, these measures can be more safely used as a basis for judging the comparative values of various methods than for judging their absolute values.

¹ Not including the cost of house-to-house advertising.

² Established in field survey.

³ This assumes that the new users who still used the product at the end of a year will continue to use it at least two years more. The validity of this estimated worth, however, cannot be established until two more years have elapsed and these same new users who continued to use the product at the end of a year are interviewed to learn what per cent of them still use the product at that time.

development of a market. In this exhibit we have two vertical scales, one, along the left, to show the per cent of total housewives who belong in various groups of non-users, and another, at the right, to show the cost per new user

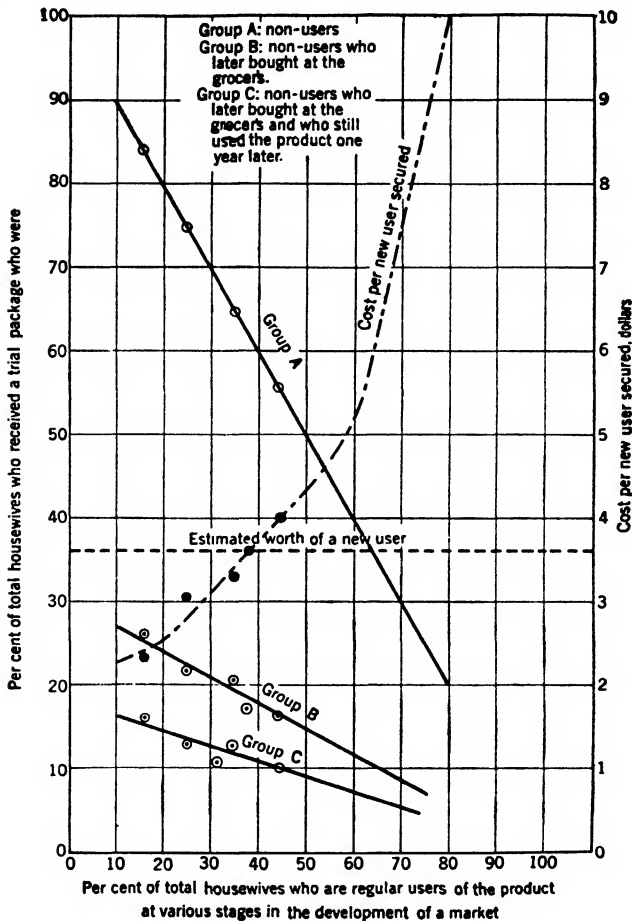


FIG. 6.—Showing the point in the development of a market at which the cost of securing a new user by house-to-house sampling begins to exceed the estimated worth per new user.

secured. Opposite the point on the base line which indicates a market with 25 per cent regular users or 75 per cent non-users, we find the points plotted in connection with house-to-house sampling in city A. territory 1. Opposite

the point on the base line which indicates a city with 16 per cent regular users, or 84 per cent non-users, we find points plotted in connection with house-to-house sampling in city A, territory 2. Similarly, other actual cases were used to plot points upon which the various curves are based.

The most significant observation to be made from this exhibit is that the cost per new user secured begins to exceed the estimated worth of a new user at a point opposite 38 per cent on the base scale. This means that whenever the percentage of housewives in a city who use the product regularly, exceeds 38 per cent, the cost of securing a new user by the house-to-house sampling method begins to exceed the estimated worth of a new user.

But there are other differences in markets which affect the return that a manufacturer can get from an advertising expenditure. For example, in this particular study certain sections of the market were found, in which the prices of competing products were so low and the price resistance to the

TABLE III.—STATEMENT OF RESULTS AND COSTS

Location	Cost per housewife who received a trial package	Per cent of the total housewives receiving the trial package who were:		Cost per non-user who bought at grocer's
		Non-users	Non-users and later bought at the grocer's	
City 1*.....	\$0.12	100†	32	\$0.37
City 2†.....	0.12	100	17	0.71

* City 1 water analysis: 28 to 33 grains (water generally considered to be hard).

† City 2 water analysis: 8 to 10 grains (water generally considered to be of medium hardness).

‡ An entirely new product.

product so high, that an adequate return on the house-to-house sampling method was practically impossible.

To illustrate further the effects which market differences might have upon the market resistance to a product, let us take an entirely different kind of product—a soap powder. A soap manufacturer found that, of all the house-to-house advertising methods that he had been using, house-to-house sampling was the most effective for introducing a soap powder that had water-softening properties. But because the product had these properties he wanted to find out what effect hardness of water might have on the market reception to the product and the consequent costs of securing new users. In order to indicate the results secured and the consequent costs involved in securing new users in two cities that had different hardness of water, a study was made which resulted in the information presented in Table III.

Using the method presented in Fig. 6, the worth of a new user was estimated and the cost of securing a new user was found for cities of different

hardness of water. How hard a city's water supply had to be in order to promise an adequate return on the use of house-to-house sampling was thereby determined.

Other House-to-house Methods. Extensive use was made of the above methods in measuring the results of other house-to-house advertising such as house-to-house couponing, combination sampling-couponing, group products sampling and couponing.

Measuring Special Dealer Advertising. Demonstrations vs. Specials. The manufacturer of a grocery product employed two special dealer advertising methods. The first plan was to employ demonstrators who sold the product in retail stores. The second plan was to advertise in the newspapers special sales of the product through which retail grocers offered a premium with each purchase of the product.

Those who received a package of the product by either of these methods were interviewed two months after they had received the package to find out what percentage of those reached were non-users who later bought at the grocers. One year later the non-users who bought were interviewed to learn if they still used the product. In other words, the same kind of follow-up was made on these methods as has already been described in detail in the study of the house-to-house methods.

The main results of these measurements are offered in Table IV. As the figures show, premium sales by grocers showed itself to be the more economical plan for special dealer advertising, and in reaching a decision on the types of locations where these special sales among dealers could be conducted at a profit, the same method was followed as is presented in Fig. 6.

TABLE IV.—STATEMENT OF RESULTS AND COSTS

Method and location	Cost per housewife who received package	Per cent of total housewives receiving package who were non-users	Cost per non-user who received package	Per cent of total housewives receiving package who were non-users and later bought at the grocer's	Cost per non-user who bought at the grocer's
Store demonstration sales					
City 1.....	\$0.28	30	\$0.93	9	\$3.11
City 2.....	0.30	34	0.88	12	2.50
Premium sales by grocers					
City 1.....	0.08	25	0.32	5	1.60
City 2.....	0.09	28	0.32	6	1.50

Measurement of Window Displays. Under the head of special dealer advertising, some attempts have been made to measure¹ the value of window displays. One procedure in setting up such a study is given as follows:

¹ FREYD, MAX, "The Experimental Evaluation of a Merchandising Unit," *Harvard Business Review*, vol. IV, pp. 196-202.

1. A standardized window display was prepared and installed in a number of drug store windows for the purpose of answering the following questions:

- a. What is the immediate effect of the window display on sales in the store in which it is used?
- b. What is the duration of this effect?
- c. In what size and class of stores does the window display have the greatest effect on sales?

2. In company with the manufacturer's salesman, the investigator called on a large number of drug stores and arranged for an accurate check of sales of the product before, during, and after the window display was used.

3. The display was kept in the window for a period of two weeks. Sales were checked at each store in the following way. The investigator called at the store once a week, commencing four weeks before the installation of the display, and ending four weeks after it was taken out of the window, a total of ten weeks. At each call, an inventory of the product was made and the proprietor was asked the amount he had bought during the preceding seven days. From these successive inventories, the amount sold each week could easily be calculated and sales curves drawn for each store demonstrating the effect of the display.

Without going into detail concerning the control of minor variables, the answers to the three questions studied in this case are:

- a. Most window displays brought an immediate increase in sales.
- b. When the display was removed sales in that store descended to their previous level.
- c. Most favorable returns were secured among stores which had cut-prices on the product, and which demanded some reimbursement for the use of their windows.

Measuring the Effects of Mass Media. And now we come to the most difficult job of all—measuring the effects of the use of mass media. Here, one is faced with essentially the same kind of job as in measuring the results of the use of methods just given. The main difference is this. When a manufacturer uses a mass medium his audience is, of course, dispersed and difficult to locate¹ (except in a mail campaign).

Early Attempts to Measure Effects of Mass Media. Some of the early attempts to measure the effects of mass media advertising consist of interviewing prospective consumers after the advertising has been run (usually on a new product) in an attempt to learn what percentage of these prospects know of the product and what percentage have bought or used the product. These early attempts usually include no plan for separating the effects of advertising from the effects of other marketing efforts by measuring conditions in comparable territories, some of which were subjected to the influence of mass media advertising and some of which were not. But in some instances those who have conducted such studies have, more by accident than by plan, found themselves in possession of data that afforded some comparisons between conditions in territories which had been heavily covered by advertising and territories which had been lightly covered.

¹ Sometimes it is possible to get the names and addresses of subscribers to newspapers or magazines in a few sample locations. Wherever this is possible, field studies are much less tedious and expensive.

For example, a paint manufacturer had a product which was largely used in industry. He employed national magazines and farm papers to introduce this product for household use and he wanted to check up on the results of his advertising. Personal interviews were secured among housewives to learn:

1. What per cent had ever heard of the name of the product?
2. What per cent were able to associate the name of the product with the product itself and with the use of the product in the home?
3. What per cent had ever bought or used the product?

This survey showed a fairly consistent knowledge and use of the product among housewives in larger cities and in very small towns. In the middle-sized cities, however, there was considerably less knowledge and use of the product.

A subsequent analysis of the circulation of media used, showed that the magazines used were primarily reaching larger cities; that the farm papers were, of course, reaching the very small towns.

In the absence of any great differences in the use of other marketing efforts in various-sized cities and towns, this manufacturer automatically possessed, somewhat by accident, evidence which permitted him to compare relative effects of his mass advertising in locations where circulation coverage had been concentrated and in locations where circulation had been weak.

And as a by-product, he was reminded that such an analysis of circulation should have preceded, rather than followed, his selection and use of mass media.

Now let us take an example of an experimental study of mass media effects which illustrates a more careful and planned procedure.

A national advertiser having national distribution and using magazines and newspapers in the cost ratio of two to one, desired to determine the effect on sales of his newspaper advertising.

Sales for the last ten years had been divided into three territories, namely, Pacific section, central section, and Atlantic section. All newspaper advertising had been segregated according to these three divisions. The advertising appropriation had been allocated according to native white population. Per capita native white sales seemed to be about the same for each of the three sections. Therefore, in summary, we have the United States divided into three sales units, each unit having been treated with the same proportionate advertising influences.

In 1929, it was decided to discontinue all newspaper advertising in the central states area for a period of three months, namely, April, May, and June; then, for the subsequent three months, July, August, and September, to cut all newspaper advertising in the Atlantic section. Thus for one three-month period the lack of newspaper advertising would be felt in the central section and for the next three-month period the lack of newspaper advertising would be felt in the Atlantic section. All other marketing efforts were purposely kept normal for each of the three units.

Each unit was regarded as a separate entity and a trend of sales was fitted to each. By eliminating seasonal influences, monthly variations were determined for each division.

Using the Pacific Coast section as the control section, bench marks were obtained for determining what sales should have been in the central section. When these bench marks were compared with actual sales, the results for the three-month campaign were that less profit was lost, as a result of decreased sales, than the saving effected by the cut in advertising. The same procedure was used in measuring the results from the lack of advertising in the Atlantic section.

To determine what the influence of additional newspaper advertising would be, the regular advertising appropriation was doubled during the months of January and February, 1930, in the states of Oklahoma and Missouri. All other states received the regular appropriation.

By using sales in the non-test states as control states, bench marks were determined as to what sales would have been in Oklahoma and Missouri. The profits resulting from increased sales were less than the additional cost of the advertising.

Advertising Costs vs. Advertising Results. Any comprehensive study of advertising effects (regardless of advertising method used) should ultimately lead to the discovery of that point at which advertising costs begin to exceed the estimated worth of the results secured. Such studies may involve measures of the results on sales and profits including any one or more of such points as are offered in the following outline:

CONDITIONS WHICH MIGHT BE CHECKED "BEFORE," "DURING," AND
"AFTER" PERIOD OF EXPERIMENTAL ADVERTISING

I. In relation to the consumer.

A. Percentage of consumers who know of the product.

B. Consumer use of the product.

1. Percentage of regular and occasional users.
2. Percentage of consumers who use the product for various purposes.
3. Reasons given for using the product.
4. Reasons given for not using the product.
5. Characteristics of users and of non-users.
6. Trends in the use of the product.
7. The extent to which users also use competing products.

C. Consumer buying habits.

1. Quantities bought.
2. Frequency of buying.
3. Entrenchment of brand habits.

II. In relation to the distributive system.

A. Retailers.

1. Number.
2. Size.
3. Kind.
4. Geographical location.

B. Retail sales.

1. Turnover, by types and locations of stores.
2. Volume, by types and locations of stores.

C. Retailers' sales efforts.

1. Physical arrangement of stock.
2. Willingness to suggest or recommend the product as opposed to substituting some other.

3. Attitude toward company's advertising and sales program.
- D. Amount of personal selling required to retailers.
 1. Number of salesman's calls per day.
 2. Frequency of calls on individual dealers.

(If jobbers are used, similar conditions should be checked among jobbers.)

III. In relation to costs.

A. Effects on various costs of marketing.

1. Market study.
2. Advertising.
3. Selling.
4. Transportation.
5. Overhead.
6. Expense.

B. Effects on various costs of production.

1. Raw materials.
2. Plan and design.
3. Labor.
4. Machinery.
5. Overhead.
6. Expense.

When a manufacturer can trace sales into certain self-contained markets that are coextensive with the territories reached by the advertising, he is in position to measure total effects from his office records. When he cannot he is forced into sample field studies. But even the manufacturer who can trace his sales into self-contained markets must extend his studies into the field, if he is interested in analyzing total effects among different classes of people or inquiring into the conditions responsible for these effects.

Limitations of Inquiries as a Measure. Counting inquiries has been a popular method for attempting to measure mass media results—probably because this method uses data readily available. Inquiries can be used as a relative measure in some cases, notably by those who sell exclusively by mail and who key their individual advertisements in such a way that inquiries and sales growing out of these inquiries can be associated with individual keyed advertisements. These general methods have been ably presented by Falk.¹

But even in such cases, inquiries do not give the answer to advertising effectiveness until the sales growing out of these inquiries are traced. Only when sales flow entirely through inquiries—either by mail or personal follow-up—can one be sure that he is tapping all important sources of business by following the trail of inquiries.

Unfortunately, inquiries have commonly been held up as a measure of advertising effectiveness to many organizations which do not fit this description—with little or no attention given to the assumptions and limitations involved.

Inquiries themselves may be quite meaningless in relation to sales and profits. Is there anyone who has not heard the story of the Scotch maid

¹ FALK, A. T., "Analysing Advertising Results," *Harvard Business Review*, January and April, 1929.

who mailed letters to herself so that the postman (whom she liked but who never looked at her) would be sure to call every day? It is not so difficult to prepare an advertisement that will pull inquiries. But they may mean little more than the letters the Scotch maid sent to herself. The advertisement that pulls most inquiries may not be worth most at the profit line. Theoretically, it is possible to get a comparative measure of the value of two advertisements designed to accomplish the same purpose through the relative number of inquiries received from those two advertisements. But in those cases where the bulk of the manufacturer's business comes from those who are not heard from, inquiries are impractical for three main reasons:

1. It is difficult, if not impossible, to secure circumstances which are sufficiently comparable.

2. It is dangerous to assume that the measured results are safely indicative of the total results.

3. There are many other more direct and more inclusive measures of advertising effect that can be used with so much less risk.

The Need for Continuing Experiments. Even though a manufacturer has been advertising for years it might be dangerous for him to be too well satisfied with his present advertising practice. He may be employing the wrong type of media. He may be using the right types of media but using the wrong media within a given type of classification. Or he may be right in types of media, and right on specific media within each type and yet be wrong in the use that he is making of these media, *i.e.*, he may be using the wrong size of space, frequency of insertion, or nature of appeal.

It is not necessary to try to answer all of these questions within a few months, or a year, or even five years. But if one is ever to be in a safe position to answer any one of them, he must make a beginning. He must begin with some systematic attempt to record the history of his advertising experience. How much more all of us would know about advertising today, if advertisers had begun ten years ago, and had continued, to study even part of the effects of their advertising.

Instead of attempting to determine in advance exactly how he will spend his entire advertising appropriation for the coming year, any advertiser, who had not already done so, might profitably begin by inaugurating an experimental year in advertising. At the beginning of his year, he might set aside for experimental work part of his appropriation, using the other part just as he ordinarily would.

Before many weeks have elapsed some of the results of the experimental work may be available and the manufacturer can use this information as a guide in effecting any desired readjustments in the advertising program.

If for example, he experiments with three methods, and the first proves to be wholly unsatisfactory, the second produces sufficient results to indicate that it is profitable, and the third shows results that promise to be extremely profitable, he might decide to discontinue the first method entirely, to continue the second method on a modified scale, and to place primary emphasis on the third method which appears to be most profitable.

But in any event, at the end of that year he should have a fuller knowledge of the most profitable methods for doing his advertising job.

But testing and experimenting will not be finished at the end of that year. Business is dynamic. Situations change. The job of keeping in step with change is a continuing one. The use of a medium that is profitable this year may soon reach the point of diminishing returns.

Only when those in advertising possess the patience and the ability to analyze and to measure, does advertising begin to assume a scientific complexion.

But some will say, "You're making this thing entirely too complicated. Why try to measure the immeasurable?"

Popular reasons given for *not* experimenting are: "It's too much extra work," or "Our company is too small for such a detailed analysis."

But the *real* reason sometimes runs deeper. All of us are more likely to defend than we are to question what we have done. None of us enjoys admitting his mistakes. Experimenting usually uncovers errors of omission and commission, and not until we acquire a genuine hospitality toward information that shows us where we have made our mistakes, can we possibly make the most of our advertising experience.

CHAPTER III

MERCHANDISING : ADAPTING THE PRODUCT TO THE MARKET

By H. A. RICHMOND, *Director Publicity and Advertising Service, Policyholders Service Bureau, Metropolitan Life Insurance Company*

The problem of product adaptation to market requirements or conditions has become increasingly serious in the last decade. Many factors have contributed. Primarily, the marked tendency toward price competition has been the urge behind the growing attention given to merchandising.

In meeting the competitive situation, the first reaction of business management appears to have been to increase the intensity of selling operations—to spend more for advertising, to inaugurate sales promotion plans, to cultivate closer relations with dealers.

While such devices have helped, it has become increasingly evident that they have not provided a complete solution of the marketing problem. Increased advertising and sales promotion have been balanced by similar activities on the part of competitors, and profitless selling has been the outcome.

The merchandising function has grown out of the search for devices which would help in removing products from the realm of price competition. Certain manufacturers have found themselves relatively immune to price selling. In most of these cases the product has been of a "specialty" nature. It has had distinct characteristics setting it off from other similar products, and making it preferred.

It was to be expected that manufacturers generally—observing the enviable position of those selling specialty goods—should seek for themselves the same advantages. They have sought to achieve for their products a position of stable demand and stable price. They have been asking themselves the question, "What can I do to make my product a specialty?" It is at this point that the merchandising problem begins.

What Is Merchandising? A wide variety of meanings are attached to the term merchandising. This is no doubt due to the fact that the function to which the term is now being generally applied has been clearly recognized and defined only in recent years. The loose usage of the term doubtless reflects to some degree the fact that the function is in an evolutionary stage.

In its early usage, merchandising was a term for describing the activities of the merchant of those days—buying and selling goods for profit. As such, it would hardly apply to selling activities of the manufacturer, either then or today.

Many writers on marketing subjects have used the term merchandising almost synonymously with marketing. Frequently, it is applied to activities such as sales promotion, dealer cooperation, pricing, and the like. But the term has come to have a more specialized and exact meaning. It has been longest in use in the retail field and is there used most specifically. Retail merchandising is now generally defined as the *selection* of merchandise which will meet the needs, wants, and desires of consumers.

Manufacturers are more and more thinking of merchandising in terms similar to the retail usage. The main distinction is that for "select" the manufacturer must substitute "create." For him merchandising is the creation of goods which people will want to buy. One authority has defined merchandising as "that phase of marketing which centers around the product itself." The term applies to those activities directed toward stimulating consumer demand for a product by changes in the product itself or its adjuncts. Merchandising precedes production. Advertising and sales promotion, likewise, aim to stimulate consumer demand, but they start where merchandising leaves off. Merchandising consists of putting sales interest into product as part and parcel of it. Sales promotion consists of creating sales interest through activities extraneous to the product and coming after the processes of production are completed.

It is through merchandising that production and selling come closest together. Merchandising implies that a definite effort has been made, in advance of producing goods, to determine their sales possibilities. It signifies the coordination of manufacture and sale, taking into account consumer requirements and demands and the manufacturing facilities of the plant.

Objectives in Merchandising. Fundamentally, the purpose of merchandising is to bring product and market into such a relationship that capacity output of the plant can be marketed on a profitable basis. It aims to attach special consumer appeal and interest to the product by incorporating into it distinctive features that the public wants.

Merchandising aims to extend or improve the usefulness of a product, or make it more attractive, and thereby widen its demand. Increased demand permits price stabilization at levels which permit a profit. It tends to subordinate the price element in the sale and thereby helps remove the product from competition.

It is the purpose of merchandising to make staple products into specialties and keep specialties from becoming staples. Staple goods tend to be sold on an exclusively price basis. There is little to distinguish the product of one manufacturer from that of another. But when distinctive features are added the product tends to be set apart in the minds of consumers from other like products.

The specialty item, however, frequently does not remain so. Competing manufacturers are likely to incorporate similar special features into their own products. In this way, what was originally an improvement becomes a staple characteristic. The first fountain pen, for example, was decidedly a specialty, but when this pen came into general use the specialty element no longer adhered to it. With the introduction of the self-filling feature a specialty item was again created by the manufacturer responsible. Still later color was introduced with like effect.

The continual introduction of specialty features presents a serious problem from the standpoint of production. Manufacturing efficiency is at the peak under mass production. Large-scale economies may be made possible by standardization of product. The sales organization, however, is inclined to want constant change. If a competitor introduces some feature which gives distinctiveness or individuality to his product, the salesman generally wants to be able to offer customers a similar product. The production executive is likely to regard such continual changes as unnecessary and tending only to increase manufacturing costs. It is the function of merchandising to determine just how far standardization may be sacrificed to consumer demands for change and variety, and at just what point loss of sales offsets possible production economies.

Putting Sales Interest into the Product. A wide variety of tools are at the disposal of the manufacturer for making his product more interesting to consumers, and for putting the entire output of his plant on a profit-producing basis. These include:

1. Improving the product's performance by adding refinements and conveniences.
2. Developing new uses or extending present use by changes which will make the product:
 - a. Demanded by more classes of users.
 - b. Used more hours in the day or days in the year.
 - c. Used in a wider geographical area.
3. Changing style or design.
4. Introducing color.
5. Making the size, quantity, or unit of sale more convenient.
6. Improving the package.
7. Putting sales value into the name.
8. Adding new items or lines.
9. Associating the product with other products in selling.
10. Reducing or simplifying line.
11. Standardizing quality.
12. Price lining.
13. Utilizing waste or by-products.
14. Supplying full directions for use.
15. Adding service features.

Every detail of the product itself and any of its adjuncts which may affect consumer satisfaction are proper subjects for investigation from a merchandising standpoint. Most of the items listed above relate to characteristics or attributes of the product itself and their importance as factors in increasing sales appeal is readily apparent. In some, like the questions of adding new items to a line or simplifying a line, the question of sales appeal may be less important than that of distribution cost.

The service factor has a sales promotion as well as a merchandising angle. In general, services not directly related to the product, or services rendered in advance of the sale, may be considered as sales promotion. Service definitely associated with the product—such, for example, as keeping a mechanism in good working order—may be considered as an adjunct of the product itself and hence primarily a merchandising problem.

Product Improvement. Changes designed to increase the utility of a product or the satisfaction derived from its use have frequently provided a powerful stimulus to consumer demand. The automobile industry affords an excellent example of merchandising through the continuous introduction of improvements which have tended to make owners of older models dissatisfied. The public has come to expect certain improvements with each new model introduced.

Product improvement is by no means limited to mechanical devices. It may be applied to drug products, food products, clothing, and in fact, to nearly every line of merchandise. Typical examples include yeast in candy form, castor oil that is tasteless, skinless frankfurters, screens that roll up, hosiery with extra thickness knitted at toe and heel, creosote-treated shingles. The list might be extended to great length.

In general, increased utility appears to be a less effective merchandising factor in products which are primarily style goods than in others.

As a guide for the development of improved features many companies have made consumer surveys to find out possible objections to their products or difficulties in use which might be eliminated.

Developing New Uses. Certain manufacturers have been notably successful in increasing consumer demand for their products by extending the range of use. In some cases the new uses developed have become a more important factor in sales than the original use for which the product was intended.

An outstanding example of the development of a new use which has tremendously enlarged consumer interest in the product is afforded in the yeast-for-health campaign of the Fleischman Yeast Company. Drano, a product originally intended to clean out obstructions in drain pipes, is being merchandised as a cleaner for garbage receptacles, refrigerators, pots and pans in which grease or food has been burned, and similar uses. Listerine, originally an antiseptic, became in turn a deodorant and a hair tonic. Unguentine developed from a surgical dressing for burns into a general all-purpose ointment for burns, cuts, boils, and the like.

In many cases, new uses for a product can be developed without making changes in the product itself. This was the case in most of the examples cited. Sometimes, however, incidental equipment must be provided. An interesting example of this is to be found in the case of Sterno, a non-liquid fuel sold in cans. The president of the company manufacturing this product states¹ that the product was originally considered to be primarily for outdoor use in summer. A survey revealed many other year-round uses: by travelers, on trains and in hotels; by theatrical folk for preparing make-up; by doctors and nurses for sterilizing; in the home, for heating baby's milk, curling irons, water for shaving, and for other purposes. It was found that many of these uses would be greatly facilitated by providing special equipment. Accordingly, such devices as toasters, vaporizers, shaving sets, flatiron holders, baby milk warmers were developed. As a result, the seasonal slump in sales during the winter is stated to have been eliminated.

The development of new uses has proved effective in freeing a product from dependence on a single trade or class of consumers, eliminating seasonal

¹ *Printers' Ink Monthly*, May, 1929.

fluctuations, and in general stabilizing sales. New uses, however, are rarely pulled out of thin air by some genius among a company's personnel. Manufacturers who have been most successful in the use of this merchandising tool have usually gone to the consumer for their inspiration. Consumer surveys and prize contests appear to be regarded as two of the best methods for getting facts about new uses.

Changing Style or Design. In the case of goods where the style or fashion element predominates merchandising activity generally centers around this factor. For such items as jewelry, silverware, and many articles of apparel, and house furnishings, style changes are probably the primary basis for stimulating consumer interest. More attention has doubtless been given to this phase of merchandising than any other. When used successfully styling has often proved an open sesame to profitable selling. On the other hand, poor styling has been a prolific cause of business reverses.

Style movements are stated by Dr. Paul Nystrom in his book, "Economics of Fashion,"¹ to be the result of rather powerful forces in human nature. Styles which are currently in vogue are defined as fashions. Fashion, according to Dr. Nystrom, is a force much like public opinion. It is impossible to determine when or where a fashion will start, or what causes it to assume the particular form that it takes. Though the essential nature of fashion may remain unexplained, it may be put to work as a tool in merchandising, just as electricity is harnessed even though its exact nature is unknown.

A number of guiding principles have evolved from the experience of manufacturers who have been notably successful in hitching their merchandising program to the style factor. These may be summed up as follows:

1. Fashions cannot be created in the sense of being prescribed by so-called fashion arbiters, such as Paris couturiers, for example.
2. Fashions move from the top—from the leaders in society—down to the masses.
3. Fashions move from the style centers and the larger cities to the smaller towns and outlying sections. Formerly this movement was relatively slow. In more recent years, however, due to the speedy dissemination of style news, through the movies, radio, and printed word, new styles spread over the entire country within the period of a few weeks or months.
4. Fashions vary to a certain degree in different geographical areas. Certain styles may have a limited vogue in the South, for example, or on the Pacific Coast. An illustration of this is afforded by the fact that brown eggs are at a premium in Boston while white eggs are preferred in New York.
5. Fashion changes are rarely abrupt. They develop with gradually increasing intensity and taper off in the same way. They proceed with a wavelike motion.
6. The length of life of a particular fashion varies with the nature of the merchandise. According to Dr. Nystrom, dress accessories, touches of color, inexpensive novelties may be in vogue for only a season. Such items as length of skirts or silhouette in garments move in cycles covering several years, while fashions in furniture and home architecture, for example, may have a life extending into decades.

¹ The Ronald Press Company, 1928.

7. Good merchandising demands working *with* style movements rather than *against* them. Corset manufacturers some years ago, for example, tried through advertising and sales promotion to offset the declining vogue for their product. Though a comprehensive program was carried out the desired result was not obtained.

8. The direction, intensity, and geographical boundaries of style movements can be gauged with considerable accuracy. Many companies make it a practice to measure such movements in the form of statistics which may be reduced to an index number basis, plotted in graph form, or recorded on maps.

9. Style movements tend to spread over all lines of merchandise, exerting a parallel influence on lines quite unrelated. The modernistic movement, for example, has influenced architecture, silverware, furniture, floor coverings, watches, and numerous other products. There are, in fact, few lines which have escaped its influence. The manufacturer of a particular product, therefore, usually finds it desirable to key it to the general style trend evidenced in other lines.

10. Best results are achieved in style merchandising when the product is neither behind nor ahead of current fashion. One extreme appears to be about as objectionable as the other.

Introducing Color. Color is one of the most flexible tools at the disposal of the merchandiser. It has incited fresh consumer interest in many products which because of their nature make the application of other merchandise appeals difficult. Bathroom fixtures, wall tile, face brick, sheets, towels, and kitchenware are products which illustrate the point.

The introduction of color has induced retailers to give many products space in window and counter displays which would not otherwise have been given. Using color in popular-priced alarm clocks, for example, brought this product off the shelves of many a retailer and put it onto the counters and into the store windows. Some of the outstanding facts from the experience of manufacturers who have introduced color into their products include the following:

1. The use of color adds to the display value of the product or package.
2. Color helps to make the product remembered by the consumer.
3. Colors must be selected with reference to the colors of other products with which the particular item is to be associated in use, so as to insure color harmony. The lamp shade manufacturer, for example, studies the colors in vogue in draperies, floor coverings, and the like.
4. Vivid, intense colors must be used with caution and sparingly.
5. Products with large areas appear to better advantage in subdued colors.
6. Certain colors appear to be better adapted to certain products than others. Thus, it is stated that pink kitchen utensils are much less in demand than are other colors.

Making Size or Quantity More Convenient. It is important that the size of the product or the unit offered for sale be examined from time to time to find out whether changes are needed to bring it into line with consumer demand and increase its appeal. The trend today is toward smaller sizes and units. It is in evidence in houses and automobiles, as well as drug and grocery items.

Too large a package may be a definite hindrance to sales. Consumers may hesitate to buy because the package or product may take up too much space in the medicine cabinet or on the kitchen cabinet shelf, or because they fear that it may spoil before being used up. It is reported by Ray Giles in "Breaking Through Competition"¹ that the manufacturer of an item sold in a 25-cent unit found that he sold twice as many pounds of his product when the package was reduced to one-third of the original size and offered at 10 cents.

In certain cases, an increase in the size of the package or unit of sale has stimulated demand. The National Lamp Works is stated to have obtained beneficial results through introducing a home assortment carton in the shape of a toy house, containing six lamps. An executive of a leading department store reports that introducing the sale of hair nets in packages of a dozen increased sales by four times.

A survey of users of the product appears to be the quickest and easiest way of finding out whether the sales unit should be made larger or smaller.

Improving the Package. Package design has proved to be the merchandising tool *par excellence* in the drug and grocery fields. It has extended, however, to nearly all lines where it can be applied. In fact, it has entered fields that would have been considered impossible a few years ago. Fresh meats are now being packaged. So are lumber, coal, dry goods, and numerous other articles—usually with satisfactory results in respect to consumer interest.

It is stated by Walter S. Hayward in "Sales Administration"² that the consumer "wants a container which will satisfy his desire for attractive appearance, keeping qualities, utility, convenience and ease in handling, correct quantity and correct price, and many other factors."

Some manufacturers have hesitated to change a package design which has been long in use, even though they recognize it as unsatisfactory. They fear that the change will cause loss of sales. The experience of a number of companies in making sudden and rather radical changes in their package designs has shown beneficial rather than harmful results.

Among recognized fundamentals in good packaging may be mentioned the following:

1. The package or container should have the maximum of utility. The bottle for Blue Label Ketchup, for example, was improved by making the neck very wide.

2. It should be in harmony with the product. Packages such as are suitable for beauty preparations, for instance, would hardly be suitable for many other products.

3. It should be in keeping with current style trends in packages and thus appear modern and up to date. Simplicity and color are modern keynotes.

4. It should bear a family resemblance to other packages in the company's line.

5. It should be so attractive in appearance that it will not only attract attention on the retailer's shelves but will also induce him to display it on counters or in windows.

¹ D. Appleton & Company, 1926.

² Harper & Brothers, 1927.

6. It should be so designed that the name will stand out distinctly no matter which way the package is turned.

Putting Sales Value into the Name. The name of a product is quite as much a part of it as the package in which it is purchased. It may be a sales asset or a liability. While it is generally considered more difficult to change a name than a package, there are instances where it has been done with excellent results. For example, Franken and Larrabee, in "Packages That Sell"¹ report that the Westinghouse Electric and Manufacturing Company changed the name of their new iron, after a test, from "Spencer thermostatic" to "click iron." The Royal Worcester Corset Company dropped the name "corset" and called their products "lingerie plastique."

Changes of name have been successfully accomplished through prize contests in which names were submitted by the contestants. The publicity attendant on the contest has served to carry consumer acceptance for the old name over to the new. In other cases, the new trade name has been added to the old. Subsequently on the package and in the advertising logotype the size of the old name has been gradually reduced and finally omitted entirely.

Some of the accepted principles governing name selection include the following:

1. The name may be suggestive of the product, as for example, Rolcreens, Sealcones, Life Savers.
2. It may suggest qualities of merit in the product, such as Real Silk, Holeproof, Nofade.
3. It may suggest the source or origin of the product, such as Cream of Wheat, Philco.
4. It should be short, easy to pronounce, and easy to spell. Lux, Keds, Duz, Drano, Loma are typical examples.
5. Separate names should be used for different grades.
6. Legal requirements must be met.

Adding New Items or Lines. Since consumer demand is always dynamic rather than static, it follows that new needs are constantly arising. The alert manufacturer is on the watch for these developments with a view to introducing new products to meet them, provided such products can be fitted into the company's production and distribution operations. The company introducing the new item enjoys the advantage of goodwill attaching to other items in the line, and hence may have a lead on competition.

Sometimes the need for development of new items or lines hinges on the necessity for making use of surplus productive equipment. An illustration of this is afforded in the experience of the Bigelow-Hartford Company. It is stated² that the change in consumer demand from narrow-width sewed carpets and rugs to the seamless variety forced the company to install broader looms. The problem then arose as to what could be done to save the investment in the old equipment. The search for new lines which might be produced on the old looms led to the manufacturing of footmats for use in motor

¹ FRANKEN, R. B., and C. B. LARRABEE, Harper & Brothers, 1928.

² "Use of Research in Developing Old Products and Introducing New Ones," Policy-holders Service Bureau, Metropolitan Life Insurance Company, 1928.

cars, decorative mats for general home use, picture mats for nurseries and the like. In this way, merchandising avoided the loss of a substantial investment.

Frequently the development of new items or side lines is conditioned by a desire to reduce distribution costs through spreading overhead over a broader line. In many cases, the salesman who has more lines to offer is more likely to make a sale. On the other hand, diffusion of sales effort over too many lines may be harmful.

In introducing new or side lines it is generally considered best to select one which can be handled by the existing sales organization. It is also helpful if the new lines supplement the old ones from a seasonal standpoint, so as to smooth out the sales curve so far as possible.

Associating the Product with Others in Selling. It has often been found that demand for a product may be increased by associating it with other products. Usually the product with which the tie-up is made is a related one. Thus, Wilson Brothers have associated a shirt and a necktie in a package with excellent results.

The importance of the ensemble idea in buying gives particular point to product association as a merchandising tool. It has been very successfully used by the Pioneer Suspender Company to stimulate interest and get retail display for their products. Their suspenders are styled to harmonize with ties and their garters are designed in line with current vogues in men's hose.

Frequently a feature has been made of some special combination of products. Such a specialty package was the combination of a new-model Gillette safety razor, a tube of shaving cream, and a shaving brush recently featured for a short time.

Product association is especially effective in such forms as gift packages, or in connection with seasonal occasions such as Valentine's Day, Mother's Day, Hallow'een, Easter, and the like. An interesting illustration is afforded in the combination of a pound of Apollo Chocolates and a novel in a single package. The plan includes an arrangement like that of the Book-of-the-Month Club, by which subscriptions are taken for one package a month for a period of six months or a year. A new novel is, of course, included each month. An example of timeliness or seasonableness in a package is the Mother's Day package of the Pepperell Manufacturing Company. This consists of a box containing an assortment of sheets and pillow cases in a selection of colors to blend with any bedroom color.

Reducing or Simplifying Lines. This merchandising factor is governed mainly by considerations of cost—both of production and distribution. It presents a most serious problem in connection with styles, patterns, sizes, and colors, tending not only to increase production costs but also to pile up inventory costs all along the line of distribution.

Many manufacturers follow a definite program of discontinuing certain numbers or items as new ones are introduced. The linoleum manufacturer, for example, discontinues the poorest selling patterns as new ones are introduced. The temptation is frequent to continue a number or pattern because some slight demand for it still exists. In many cases, however, yielding to the temptation has meant the sacrifice of profits.

Merchandise analyses with a view to eliminating unprofitable items have often shown that a large percentage of a company's sales volume is made on a small percentage of the items sold. As a result of such an analysis the Regal Shoe Company reduced the number of its styles from 2,500 to around 100. Sales statistics by items provide the basis for such analysis.

Standardizing Quality. Standardized quality or uniformity of performance of a product is generally recognized as a merchandising fundamental. Without such uniformity consumer satisfaction is not likely to be maintained. Lack of standardization in grades of lumber, for example, undoubtedly has been a contributing factor to the development of consumer interest in substitutes. Lumber manufacturers have come to realize the merchandising weakness of their position and are now offering their product in both grade-marked and trade-marked form.

Likewise, the manufacturers of spun silk, or tub silk, as it was formerly called, found the public apathetic to their product in no small measure because of the lack of any uniform standard of quality. In the program of rehabilitation undertaken by the Spun Silk Research Committee, one of the first steps has been to set up standards of quality which must be rigidly adhered to by producers engaged in the cooperative sales promotion effort.

Uniformity of performance has proved an effective merchandising tool for flour manufacturers, baking powder manufacturers, and many others. Uniformity of taste is considered vital in all food products where taste is concerned. The problem of maintaining standards and achieving uniformity is, of course, one for the production department to solve through testing laboratories or otherwise.

Price Lining. The matter of pricing can be a merchandising help or a hindrance. In arriving at a price figure manufacturers have sometimes added together the cost of production, the cost of selling, and a margin for profit. Such a procedure, from a merchandising standpoint, is generally considered unsound. Rather, the procedure followed should be the reverse. This means that the manufacturer starts with a particular price objective in view and then builds his product to meet it.

Price lining as a merchandising aid has long been recognized by retailers, particularly in the department store field. Some stores feature only the higher priced lines and cater to a more or less exclusive trade. Others cater to the lower class trade, and still others aim to satisfy the demands of high, low and medium income classes. The automobile field presents a parallel situation. There is a growing tendency on the part of each manufacturer to offer cars in price ranges which meet the pocketbooks of the various income groups. General Motors offers cars which run the whole gamut of price. Studebaker offers cars in four price groups ranging down from Pierce-Arrow at the top.

The merchandising value of producing different price lines lies in the fact that this opens a wider market to the manufacturer. There is little competition between \$1,500 cars, for example, and \$1,000 cars, between \$15 shoes and \$10 shoes, or between \$10 shoes and \$5 shoes. There is a relatively distinct market for each price group. The manufacturer selling in only one group is, therefore, selling in a limited market. By introducing additional price lines he is enabled to reach a wider range of income classes.

Successful price merchandising involves a decision by the manufacturer as to just what class of consumers he shall seek to interest in his product. If he is a shirt manufacturer, for example, he may decide to offer a product at \$1.39 or at \$5.00. But it is important that the decision be based on a recognition of the fact that two distinct markets are involved and on knowledge of the number of consumers in each class and their buying habits.

Leading merchandisers consider it important that different grades of an article be sold under separate brand names. Some go so far as to handle sales on an entirely separate basis. The Melville Shoe Corporation, for example, offers three price lines of shoes, with John Ward at the top, Rival Shoes in the middle and Thom McAn at the bottom. A separate chain of stores is operated for each of the three lines.

Utilizing Waste or By-products. Efficient and profitable operation of a manufacturing enterprise demands that waste or by-products be turned into sources of profit so far as practicable rather than remaining a charge against profits. Numerous examples are to be found where this end has been accomplished. Thus a lumber manufacturer developed a substantial toy business by utilizing waste ends. A knitted underwear manufacturer found that waste cuttings could be made into toys, and in time the toy end of the business became more important than the garment-manufacturing end. To utilize the sulphur in copper ore a copper refining company started the manufacture of sulphuric acid. Later to use the great quantity of acid produced the manufacture of chemical fertilizer was undertaken. A chemical manufacturer developed a synthetic gypsum building block which utilized the calcium sulphate produced as a by-product.

In many cases technical research has opened the door to new profits through by-products or waste utilization. In other cases the solution has been found mainly through market studies. When the new product is an outgrowth of technological research it must, of course, be analyzed from the standpoint of consumer acceptance or demand before being put on the market.

Supplying Full Directions for Use. While this factor in merchandising may usually be taken for granted, there are cases where special considerations have turned it into an important factor in stimulating consumer interest. Recipes for food preparations and general directions covering application and use are of course the rule. It is obvious that the explanation should be adequate and given in clear, simple terms.

One point often overlooked is that instruction in the use of the product itself may be secondary to instruction in operations to which the use of the product is incidental. The White Sewing Machine Company, for example, recognizes that knowledge of how to use their product is decidedly secondary to knowledge of the art of sewing. Purchasers are therefore given a course in sewing.

A similar example is afforded by the experience of the Russian Cement Company, makers of Le Page's Glue. The company recognized that the use of glue for *mending* things about the house would always be a restricted one. If they could sell their product for *making* things their market would be greatly enlarged. Accordingly, an experienced woman with the proper

qualifications was employed to devise all sorts of articles which could be made in the home with the aid of Le Page's Glue. Wooden devices which could be made by boys, as well as novelties for favors, gifts and the like, were developed in great number. The company prepared a number of instruction books telling just how the different items could be made. Instead of giving these away they were sold at 10 cents each. Many hundreds of thousands have been distributed.

The Stanley Works, to increase the use of its tools worked out plans for making various household articles and toys by amateurs. Later a book entitled "How to Work with Tools and Wood" was issued. This was sold at a nominal price. The plan proved effective in increasing sales of Stanley tools.

Service as a Merchandising Appeal. For many items of merchandise of a mechanical nature, such as oil burners, automobiles, mechanical refrigerators, and the like, service in the sense of being able readily to secure the services of a mechanic for adjustments or repairs is highly important to continued satisfactory use. Service without charge for a limited period is usually a part of the sale.

A different type of service is that rendered by printing organizations in helping customers to prepare copy and similar services by magazines and newspapers for their advertisers.

The tendency today is to add service features as a means of stimulating consumer interest in and satisfaction with the product, and make it preferred to what competitors offer.

Are Merchandising Problems Limited to Particular Lines of Business? There is a tendency in some quarters to regard problems of merchandising as the particular concern of manufacturers of style or fashion goods. This point of view, however, is today being generally discarded. The manufacturer of staple merchandise or industrial goods may be somewhat more limited in merchandising methods which can be applied to his line but he still has a wide freedom of choice.

It is perhaps true that merchandising presents a more serious problem to the manufacturer of wearing apparel, jewelry, furniture, and the like, than to the sugar refiner or to the manufacturer of a machine tool. But the refiner of sugar—a staple product—can apply the methods of merchandising in the matter of packaging, in the name, in the introduction of special features such as making lumps shaped like the diamonds, hearts, clubs, and spades on playing cards, or making lumps flavored with lemon. Likewise, the machine tool manufacturer today is applying merchandising principles in the design of his product, in the introduction of color, and in a variety of other ways.

In general, the trend of the times is toward change and improvement in all lines of merchandise. The manufacturer who has continued making his product just as for years previously has found himself not infrequently displaced by some competitor who has applied effectively the tools of merchandising. Marketing authorities agree that the manufacture and sale of every product—whether luxury or necessity, specialty or staple—gives an opportunity to apply merchandising principles and methods. It is on the

Refinements and Conveniences. The consumer appears ever ready to accept the product which embodies some improvement or refinement. When the self-starter was introduced in automobiles, public demand soon forced all manufacturers to include it. Balloon tires soon displaced the older type of tires. Shock absorbers are now demanded as standard equipment.

The demand for labor-saving devices permeates every field—the home, the office, the factory. There is a preference for products which are ready to use. Bread is being sold already sliced. More and more, the housewife is buying delicatessen goods—ready to serve.

The manufacturer who can introduce a change in his product which will meet this demand for convenience and luxury is likely to find himself well repaid.

Attractive Appearance. The demand today is for products which are good looking. At one time utility and performance were features of prime concern in buying. Now these are taken largely for granted. Beauty, style, color—these are the factors which are tending more and more to influence sales. The live merchandiser, therefore, is constantly alert to changes which will improve the appearance of his product—or the package, in case it reaches the consumer in this form.

Harmony with Surroundings. Today is the day of the ensemble idea. Not only must the product be good looking but it must harmonize with its surroundings, or the setting in which it is to be used. In the living room, for example, draperies, rugs, furniture, and other items must conform to a particular style or to particular color combinations. In wearing apparel, in home building, there is the same insistence on harmony of style and color. Manufacturers, therefore, find it wise to study the products with which their own products are to be associated in use and to make adaptations where indicated.

Smaller Units of Purchase. In this day of smaller homes and apartment-house living, consumers want their purchases to be in small units. Lack of space for storage makes objectionable the purchase of large size units from the drug or grocery store. The consumer prefers to buy his food "hand-to-mouth" and so the grocery manufacturer finds that it pays to provide smaller-sized cans and jars and bottles. We see the introduction of 5- and 10-cent groceries. We find a growing demand for midget radios.

Research to Find Out What the Consumer Wants. Knowing what the consumer wants in respect to the merchandise he buys need not be a matter of guesswork or playing hunches. It is true that certain people appear to show special ability in gauging in advance consumer acceptance of a particular product. They seem to possess a sort of intuitive sixth sense as to what will "take" with the public.

Sound merchandising practice is tending more and more to steer away from reliance on the prophesies of such geniuses who make forecasts of consumer acceptance on the basis of their intuitive "feeling." The reason is that such judgments have all too often proved wrong. The cost of developing a new product or modifying an old one is often substantial. The possibility of loss in case of an unfavorable response on the part of prospective buyers is too great to take unnecessary risks.

It is being increasingly demonstrated that the trial and error method of finding out how a new product will be received can be avoided. By the use of research manufacturers today are putting new products on the market with a high degree of certainty of success.

An interesting example of how accurate forecasts of consumer acceptance can be made by scientific methods is afforded in the experience of the Du Pont Viscoid Company. Their procedure, as described by C. F. Brown, director of sales, at a meeting of the American Management Association,¹ is as follows:

The company recognized the need for restyling its line of toiletware known as Pyralin. A staff of stylists was engaged to find out what the public wanted. Style sources in the United States and Europe were contacted. A new line in new designs and colors was developed and given the name "Lucite."

To find out whether consumers would like and buy the new line it was decided to make a survey. An investigator was given sample sets of the new Lucite and sample sets of the old Pyralin with a view to submitting them to various types of consumers and getting an indication as to preference. In the course of the sixty days scheduled for the survey the "votes" of 1,048 women had been obtained. These were made up of business and professional women, club women, college students, and art students and instructors.

The tabulation of the results showed a 69 per cent preference for Lucite and a 31 per cent preference for Pyralin. On the strength of this preliminary survey the new product was launched on the market. The company's sales and profits subsequent to this broke all previous records. In the year following, Lucite sales proved to be 65 per cent of the total as against the forecast of 69 per cent, and Pyralin sales were 35 per cent as compared with the forecast of 31 per cent.

In making the survey, consumers were asked to indicate their preferences for nine individual designs and color combinations. There was a surprisingly close correlation between the preference given in the test and actual sales afterwards.

Methods of Determining Consumer Demand. A variety of methods are used by manufacturers to insure that their product will find favor with consumers. For the most part these may be grouped under the following headings:

1. Keeping in touch with sources of information on trends in consumer demand, such as trade publications, fashion magazines, and the like.
2. Getting the advice of style specialists.
3. Checking trends in the same or related lines—for example, making fashion counts.
4. Getting the opinions of dealers, store buyers, and the like.
5. Getting advance opinions from possible consumers.
6. Getting reactions of consumers after actual trial.
7. Collecting and analyzing sales statistics.

These various methods of finding out what the consumer wants are not mutually exclusive. A single manufacturer may use all of them. Many

¹ Marketing Executives Series, No. 64.

manufacturers use several of them regularly. In general, the more methods of checking used the greater the certainty of the forecast.

Keeping in Touch with Sources of Style Information. Reference has already been made to the fact that style as a merchandising factor affects nearly all lines of products—if not in the product itself then in the package or container. Furthermore, a particular style trend may influence a wide variety of unrelated products. For example, color has not only entered into the home—from cellar to roof—but it has likewise entered into locomotives, adding machines, telephone receivers, and a thousand and one other items. Stream-lining—first introduced in aircraft—has extended to automobiles. Many similar cases might be cited.

For these reasons, leading merchandisers make it a point to keep closely in touch with current style trends through trade and fashion magazines, style bureaus, and the like. In bringing out new styles or designs they aim to relate them to the trends which they find to exist in other lines. The Elgin National Watch Company, for example, in seeking to introduce modern art into its products, is reported to have consulted leading couturiers in Paris.

In the wearing apparel field, where fashion is a factor of primary importance, many manufacturers keep close contact with places and events which draw society leaders, for it is generally recognized that style percolates from the top downward. Paris, Deauville, Miami, Newport, and other haunts of society are covered by style reporters, as are races, polo matches, and other sporting events attended by society.

Employment of Style Specialists. The increasingly important place of style in merchandising has emphasized the place of the specialist in this field. The stylist, or style advisor, is a person who has made a specialty of studying style trends and the influences governing them. It has been said that style is an expression of a mode of living, that style changes have their roots deep in human nature. It is agreed by style specialists that, broadly speaking, styles are not created at will, but rather that they emerge out of the habits and customs of the age.

Proper styling, then, is a broad complex problem which goes beyond the scope of activities of the shop designer of the old school. Manufacturers who are notably successful as merchandisers usually employ stylists who devote their time exclusively to the manufacturer's problems or who are engaged on a consulting basis. The stylist points out the nature and direction of the style trend to be followed. The company designer interprets this in the particular merchandise to be produced.

Where the styling work of a company is highly important and extensive, the work of the stylist may be extended to the point where a style bureau is organized. The Stehli Silk Company, for example, maintain a style bureau which collects and analyzes available style data with a view to determining trends and to anticipate fashion demands by at least three months. The bureau maintains a branch in Paris. The New York Office is stated by Paul Bonner, vice president of the company, in an address before the First Southern Manufacturers Sales Conference, to be "in constant touch with the fashion editors of the fashion publications, with the stylists and fashion advisors of the large department stores and department store groups, and with the

leading American dressmakers and designers. Furthermore, they cover as style reporters the large social events of the season." According to Mr. Bonner, the style expert armed with information such as the style bureau supplies has little necessity for guesswork.

The members of the National Association of Retail Clothiers and Furnishers, according to Kenneth Dameron in an address before a meeting of the American Management Association, receive a compilation of opinions by twenty leading stylists as to style trends and best sellers in various sections of the country. Similar pooling of style information occurs in a number of other cases.

Checking Trends in the Same or Related Lines. One of the most common methods of checking trends in consumer demand for a particular line of merchandise is to watch what competitors are doing. If some new feature is introduced by several competitors and if leading stores push the new product, general consumer acceptance is indicated. Watching the advertisements in newspapers and magazines as a means of keeping in touch with new developments is common practice.

A more exact method of checking frequently employed is the fashion count. This involves placing investigators at strategic points, such as street corners, where there is a large number of passers-by, hotel lobbies, railroad stations, and the like. The investigator counts the number of people wearing or not wearing the particular items being checked. One of the rubber footwear manufacturers, for example, used this method to find out the relative popularity of different styles of rubbers, such as sandals, storm rubbers, and the like, and also of galoshes.

Getting the Opinions of Dealers. Many manufacturers make it a practice to secure opinions from dealers as to the probable reception by the public of proposed new products or new styles and designs. Sometimes the canvass of dealer opinion is made by the company's salesmen who may carry samples of the product or photographs.

Some companies employ special investigators for this work. Such surveys generally cover all the factors or agencies involved in distributing the particular product such as wholesalers, jobbers and others. In connection with the development of a new product for use in home building, for example, surveys have been made which covered not only building supply dealers but also architects and contractors.

One manufacturer follows the practice of sending questionnaires to dealers to secure style information. As the returns come in they are recorded on maps so that geographic differences as reflected in style trends will be indicated where they exist.

A few manufacturers have organized advisory councils of dealers for the purpose of maintaining closer contact—for giving the manufacturer the benefit of the dealer's point of view and for giving the dealer a voice in the determination of company policies. Such councils have proved helpful as a check in introducing new styles and designs.

Getting Advance Opinions from Possible Consumers. This device is particularly adapted to many types of merchandise and is rapidly gaining in popularity. It is used especially in the case of food products. Those contributing

information taste the new recipe and give their reaction, usually by indicating their order of preference for various samples submitted.

The same method is frequently used to forecast the popularity of new colors, new designs, new names, new packages. When properly used such tests forecast consumer acceptance with a high degree of accuracy. It is, of course, important that those contributing information in such surveys constitute a representative sampling of consumers who are expected to buy the product, and that the number tested be large enough to make the results statistically reliable.

The methods by which such consumer reactions can be obtained are various. In certain cases, questionnaires sent through the mail may be used. One manufacturer, for example, is reported to have asked the company's salesmen to secure from retailers a list of users of the company's products. These numbered thirty-eight, and the company was considering reducing the line. A total of about 500 names was obtained. To these was sent a letter asking the recipient to indicate on an attached check list the five products, in order of preference, which he would like to have retained should the company decide to reduce the line to five items. Those answering the questionnaire were offered a sample box of the company's latest product.

More common than the use of mail questionnaires is the practice of personally interviewing prospective consumers. This is frequently done by house-to-house visits. Some manufacturers station investigators in their dealers' stores to question customers. In other cases such tests have been conducted in classrooms, offices, at club meetings, food and fashion shows, and under a variety of other circumstances.

Getting Reactions from Consumers after Actual Trial. This appears to be a highly reliable method of predetermining consumer response to a new or changed product and apparently is growing in favor. In some cases, manufacturers make tests of this kind by giving the product to a number of consumers to try out. This method is particularly applicable to products which must be used over a period of time before consumer reaction takes definite form. The Fuller Brush Company tests each new item in this way.

A novel method of determining consumer response to a new electric iron is reported by Franken and Larrabee in their book, "Packages that Sell." With the first few hundred irons put on the market in Buffalo was enclosed a card which the consumer was asked to fill out and return to the company. The card called for information as to the buyer's attitude toward the new iron. As an inducement for sending in the card a side rest for the iron was offered.

The practice of testing consumer response in a limited area and extending marketing operations only if the test indicates a favorable reaction has been used by many manufacturers. Sliced bread, for example, is reported to have been tested out in particular communities. "Tiolene," a packaged motor oil, was marketed on a wide scale after tests in two cities showed consumer acceptance. Such examples might be extended at length.

Whenever it is practicable to test out consumer acceptance of a product in a limited way, before going into large-scale production operations, this

method is generally regarded as unsurpassed. For many products, however, the method is scarcely feasible. It is obvious that a new automobile model, for example, could not be tested for consumer acceptance in this way. The same applies in greater or lesser degree to most fashion lines.

Collecting and Analyzing Sales Statistics. The value of sales figures as a means of forecasting style trends and changes in consumer demand has come to be recognized only within comparatively recent years. When fashion trends were less clearly understood there was a tendency to regard them as developing more or less by chance and shifting their courses suddenly and without cause. This view has since been proved incorrect. It has been demonstrated that style movements proceed rather slowly. The fashions of next month and next year are in the making today.

The vogue for short skirts, for example, was in process of development for several years during which the length of skirts was gradually reduced. The present vogue for longer skirts is stated by style experts to have been clearly indicated two years ago, when this mode was being gradually adopted for evening wear.

By the setting up of proper sales records, therefore, it has proved practicable to forecast the direction and intensity of style trends with a fairly high degree of accuracy. The use of sales records as a basis for merchandise control has been more extensively used by retailers than by manufacturers. Successful retail merchandisers keep a close watch of sales figures for different classes of patterns, colors, textures, and the like, and in this way keep merchandise stocks in line with demand. The same method may likewise be used by the manufacturer.

Sales records for the first few months that a new product or design is on the market furnish an excellent index to the future. For example, it is reported by John Alcott, style advisor to Bird & Son, in an address before the First Southern Manufacturers Sales Conference that the rate at which a new rug design sells during the first three or six months furnishes a reliable basis for projecting the sales curve into the future.

The American Woolen Company is reported¹ to study the sales records of each fabric in the preparation of the new season's merchandise. Those most in demand are automatically repeated, sometimes with slight modifications. Numbers dropped are replaced by new designs. The same report states that the M. J. Whittall Associates keep an individual record of each pattern and coloring, covering the quantity of each on order and in stock as well as sold.

A number of companies make it a practice not only to compile sales statistics for their own use in deciding what items to continue and what ones to drop, but to pass this information on to their dealers as a guide in their buying. The Boyd-Welsh Shoe Company of St. Louis issues weekly to dealers a style report showing on a percentage basis the breakdown of sales according to materials, styles and the like. W. & J. Sloane of New York also publish to their trade stock sheets listing patterns in the order of preference as shown by total sales.

¹"The Use of Style and Design in Industry," Metropolitan Life Insurance Company.

Sales of merchandise to dealers do not always accurately reflect sales to consumers. There is always a certain amount of lag. Furthermore, dealers may be buying patterns or styles which accumulate in stock and later must be gotten rid of through special mark-downs. To overcome these difficulties and get sales statistics that reflect consumer demand in the most accurate possible manner, one hosiery manufacturer has adopted a plan for getting sales figures daily from certain stores in different parts of the country. Each night these stores send in a report on sales made that day on each number in the line. In this way the company can at once detect any falling off in the popularity of particular numbers and can gauge production operations accordingly.

Use of Style Indexes. The process of measuring the direction and intensity of style movements by means of sales figures has so completely demonstrated its value that it is being reduced to index form. Such index numbers may be set up to record fluctuations in demand, as measured by sales, for designs, colors, and in fact any other merchandising factor.

Cheney Brothers have been among the leaders in the development of such indexes. The Cheney Color Index showing the trends in demand for various color families was inaugurated some years ago. It is published monthly for distribution to the trade. Graphs are plotted showing the movement of each color family over a six-month period. The index is so made up that the average of all the colors plotted would be 100. As certain colors gain in popularity over the group average the index number for these rises above 100, and conversely, as the popularity of a color wanes in respect to the combined average its index number falls below 100.

Pooling of Statistics Showing Style Trends. It is obvious that the reliability of sales statistics or index numbers reflecting fashion movements is increased with any increase in the volume of sales represented. While the figures for a single company might not be highly reliable, figures representing the combined sales of several companies are much more likely to be so. By pooling figures in this way each cooperating company gains the benefit of more accurate information than it could possibly obtain by acting independently.

In recognition of these facts, companies in a number of cases have gotten together, usually through the medium of an established trade organization, to pool sales figures reflecting style trends. An example of such an arrangement is afforded by the Wool Institute. The mills in the institute membership report sales on a percentage basis broken down according to colors and patterns. The institute prepares a combined report which is sent to the members. In this way each member can know with considerable certainty just what designs and colors are enjoying popularity and what ones are on the wane.

Organization of Merchandising Activities. As merchandising has evolved as a separate and distinct function in marketing, and as the scope of merchandising activities has grown, it is natural that parallel changes in business organization should take place.

In the absence of definite organization in the company and of placing responsibility for merchandising, two counter tendencies are often in evidence. The sales organization is sometimes disposed to want changes made in the

product to match each innovation or feature offered by competitors. In this way the sales organization is in a position to satisfy objections of customers or meet any preference for competing products, aside from price considerations.

The production department, on the other hand, sometimes is inclined to question the value of frequent changes in the product. It is conscious of the production economies in a standardized product and is likely to associate increases in manufacturing costs with decreases in profits.

Merchandising, as already indicated, serves to coordinate the production and sales departments. Its function is to balance a possible increase in production cost with a possible increase in profits due to increased sales appeal in the new or changed product. Or, on the other hand, it must consider whether a saving in cost of manufacture may not more than offset the possible loss of sales through the discontinuance of the less popular items in a line.

Today, a growing number of manufacturers are recognizing the value of organizing for merchandising—of centering in one individual the responsibility for finding out what consumers want and interpreting it in terms of the company's products. Such an individual is usually given the title of merchandise manager, a title which has come into common usage in the department-store field. The functions of the merchandise manager in the retail field and in the manufacturing enterprise may be considered as practically identical in so far as they relate to keeping in touch with consumer demand. The major point of distinction lies in the fact that one *selects* from a wide variety of merchandise offered that which will conform to consumer demand, while the other *creates* merchandise that will meet these requirements.

From what has already been stated as to the growing tendency to reduce merchandising to a scientific basis—measuring consumer acceptance or demand by the application of research methods—it follows that the merchandise manager must be analytically minded. On the other hand, he requires imagination in order to develop new features in the product that will meet the characteristics of consumer demand which his studies have revealed.

Where the company employs a stylist this person is usually on the staff of the merchandise manager. Also the merchandise manager serves as the contact with the style consultant.

In companies which do not have an executive in the capacity of merchandise manager, a major part of the functions involved may be placed in the hands of the stylist, or divided between the stylist and some company executive. Where merchandising activities are not sufficiently extensive to require a merchandise manager, or the full time of a stylist, the employment of a style adviser may meet the situation.

The work of the merchandise division of the Gorham Company is typical of that in many other organizations. This division is charged with originating new styles and designs. The merchandise manager sends to the designing department requisitions for new designs, stating details as to style, size, capacity, weight, cost, finish, and other requirements. For a specific item, the finished drawing after being approved by the merchandise manager is

sent to the general superintendent to have a sample made up. If the item is not specific, a number of designs are prepared which are submitted to a merchandise committee made up of representatives of the design, merchandise, sales, manufacturing, and production departments.

Whether or not a merchandise department has been set up the practice of having new styles and designs considered and approved by a merchandise committee is increasingly being followed. Such a plan is used by the General Electric Company. For many years a committee of three members, representing the production, designing and architectural points of view, has passed on new designs, with a view to insuring practicability of production, maximum utility, and best possible appearance.

Whether a particular company should set up a merchandise department to give constant attention to the matter of product improvement or continuous adaption to consumer demand, appears to depend largely on the number of lines involved and the frequency with which changes are demanded. In cases where it is not considered necessary to organize a merchandise department it is often considered desirable to assign to one executive the duty of studying the company's merchandise with a view to improving it. In the opinion of merchandising authorities, there are few products which are not susceptible to improvement, either in utility, appearance, or otherwise.

CHAPTER IV

PRICE MAKING AND PRICE POLICY¹

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Influences Determining the Price Policy. What determines a company's price policy? Obviously, many of the determining factors vary from industry to industry and from one concern to another in the same industry. However, there are a few underlying principles which must be considered in all cases. The selling price of a commodity must first cover the cost of manufacture, including material, labor, and overhead, as well as administrative and selling expenses. There should then be a sufficient margin after all of these expenses are deducted, and after allowances have been made for ample depreciation, taxes, interest, and the like, to yield the seller a profit which is ordinarily considered "reasonable" for a business subject to the particular degree of risk. Without quibbling regarding the economic theories involved, this profit may be regarded as covering not merely a "fair return" on the owners' capital, but also an additional amount as compensation for the *risks* which have been assumed by the owners in the capacity of entrepreneurs. Accordingly, the margin of profit aimed at in certain lines of business will normally be very much higher than that which is expected in other lines. The pricing policy will, therefore, be much influenced by the degree of risk.

Further, the *conditions of production* under which the commodity is made will have a good deal of influence upon the price policy which can be followed. If production is carried on under conditions of increasing cost or diminishing returns, it would very obviously be folly to attempt to increase sales by keeping the price as low as possible. On the other hand, when production is carried on under conditions of decreasing cost or increasing returns, there may at times be a very definite gain in increasing volume of sales by means of a decrease in prices, so that larger aggregate net profits can be made, even though the profit per unit of goods sold is less than if higher prices had been maintained.

Also, the nature of the *demand* must be carefully considered. If a commodity is subject to an inelastic demand, changes in price may have no particular effect on the number of units which can be sold. On the other hand, if the demand is elastic a very nice problem of calculation may arise as to what price policy will yield the highest net returns. There is at all times this interplay of conditions of cost and conditions of demand.

¹ Adapted by permission from "Applied Business Finance," McGraw-Hill Book Company, Inc., 1929.

It must not be supposed, however, that the commonly stated economic theory to the effect that the selling price tends to settle at a point which represents the cost of production to the marginal producer, or to the most efficient producer of the goods, is literally true. This, no doubt, is a long-run tendency, but the theory applies to a static rather than a dynamic state of affairs. The business world, however, is most dynamic. Conditions constantly change. When the long run has arrived, a wholly new basis of costs has also been reached. There is haggling and bargaining and adjustment which cannot be reduced to any definite formulae.

The market phenomena of price frequently show extremely wide variations from any rules which the armchair theorist may have laid down, though a careful study of these principles is very valuable for purposes of guidance. At all times some goods are sold below the cost of production, whether voluntarily or involuntarily. Further, in certain lines of business there are probably occasions when all goods are being sold far in excess of their cost of production, due to psychological and other considerations. It is frequently possible to increase the sale of goods by increasing the price and appealing to the vanity or the fear of the customer. When prices were tending rapidly upward toward the end of the war period, many dealers increased their volume of sales, at enormous profits, by persuading customers that the price would rise still higher. On the other hand, when prices began to drop, there were many instances in which trade was lost altogether as a result of price reductions. The customers decided that if prices were dropping they would drop still further, and that goods might be purchased more profitably at some future time.

Such is the play and interplay of forces which appear at all stages of the business cycle and which vary in their effectiveness from industry to industry. In a measure it is true to say that the law of price is as variable as is human psychology. And, after all, it is the customer and not the producer who sets the price.

To sum up the matter very briefly, such considerations as the following must be carefully weighed when the seller puts a price on his goods:

1. What do the goods *cost* delivered to the customer, allowance having been made for all items of expense and a reasonable profit? As a general principle, no concern is justified in selling at a loss. Exceptions to this rule will be noted in a moment.

2. What does the *competitor* charge for similar goods, and what does it cost him to produce? Many a business has ruined itself by attempting to sell at a price made by a competitor who did not know his own costs of production. In certain well-established lines of industry it may be absolutely essential for a new seller to accept the price standards set by those already in the field. If so, his problem is greatly simplified.

3. The considerations just mentioned will enable the seller to determine whether he can afford to do business. After this point, it is essential to consider the customer and his needs. What are the conditions of *demand*? Can a sufficient amount of the goods be sold at a price necessary to enable the business to be carried on? It will be most important to study the demand, not only in a general way as to its elasticity or inelasticity, but also with

specific reference to the peculiarities of prospective purchasers. For example, what class of customers are to be appealed to? What is their prevailing psychology? What is their standard of living? What are their customs and prejudices?

Many a hopeful business has been wrecked by neglecting to make allowances for some of these psychological factors which have no relation whatever to questions of cost or of the abstract theories of demand and supply. The producer can by no means be sure that certain classes of customers will buy his goods, even though the price is right and even though apparently they might need goods similar to those he has for sale. There may be national, religious, racial, or political prejudices which will completely unbalance the most carefully laid plans that have failed to consider these intangible but most powerful elements in the situation.

4. Closely related to the foregoing consideration is the question of *quality and service*. Quality may be either tangible or intangible so far as it relates to the sale of a particular commodity. What people can be made to think of a product is frequently far more effective in influencing its selling price than the real quality as measured in terms of usefulness or durability. The appeal to the imagination is frequently the most effective appeal to the pocketbook. Particular individual services rendered in connection with the sale of the goods may enable a price to be secured which is very much out of line with the actual cost of production.

5. Naturally, there are very many other considerations to be borne in mind. Most of these, however, are in some way related to the foregoing.

a. It should, perhaps, be noted that certain types of seasonal goods will normally be sold at a price which is apparently very high as compared with the actual cost of production, due sometimes to unusual risks undertaken by the seller. The same consideration may apply in connection with highly "fashional" products.

b. Also, the customary or possible rate of turnover will sometimes markedly affect the price. Where the annual turnover of goods, from the nature of the case, must be very low, it frequently happens that a price is made and maintained which represents a good deal of insurance charged by the seller over and above all actual expenses.

c. Similarly if the customary terms of sale are long, the price must be increased in order to provide sufficient interest on capital invested in receivables as well as to insure the seller against the additional risks which result from the extension of longer credits.

Relation to Market Prices. Having made some of the analyses here indicated, the seller of goods must determine in his particular case whether he wishes to sell (a) below the market, (b) at the market, or (c) above the market. In the former case his aim will be to undercut competitors and make larger net returns through a small margin of profit on a larger volume of units sold. If the second policy is followed it will be necessary to adopt some method of differentiating the product from similar ones already on the market. This is the easiest method to follow, but may not lead to any particular degree of success unless the product is very vigorously pushed by advertising. When the conscious attempt is made to sell goods at a higher

price than is commanded by those of a similar quality now on the market, it is necessary to emphasize certain distinctive features. There must be something special about the goods which will attract the interest of the consumer, even though the actual quality is no better than could be secured at a lower price. In such cases advertising must be extensively used.

Upon the whole the business man in attempting to arrive at the most profitable price for his goods thinks more of consumers surplus, as the economist terms it, than of the mere interplay of demand and supply. He knows that there are many buyers who can, and will, pay a much higher price than could be secured from the mere marginal purchaser. He may, therefore, find it much more advantageous to appeal to these "intramarginal" customers until competition forces his prices downward.

When Is It Profitable to Sell below Cost? Obviously, no concern can for any length of time sell below cost and maintain its economic existence. However, there are always some producers who sell goods below cost. Some companies make a practice of always selling certain articles at a price which is insufficient to cover the expenses of production. At times it may even be highly advantageous to sell below cost, as the term is ordinarily understood. Some of the circumstances under which goods may be sold at a loss are as follows:

1. The producer *may not know his actual cost of production*. As a result of his eagerness to do business and sell a large quantity of goods, he may rapidly use up his capital without realizing his predicament until he fails. A surprisingly large proportion of all businesses are at some time or another in this class. It is a malady particularly common to the newly launched enterprise. Even in the prosperous year of 1926, there were 197,186 corporations which sold their goods or services at a loss. Probably several times this number of unincorporated enterprises were guilty of the same practice, and doubtless few of them were aware until their income tax returns were prepared that they were actually operating at a deficit.

2. When *new capital can be readily secured from a too credulous public*, it sometimes happens that a concern continues for years to sell its product at a loss. This has undoubtedly happened in the case of many of the metal mines, which are always "on the verge of making big profits."

3. Again, goods may be sold below cost as a result of *cut-throat competition*. This practice has been from time to time followed by powerful organizations with a view to crushing competitors. Millions of dollars have been lost in price-cutting campaigns of this sort, the ultimate result of which is usually an era of higher prices when competition has temporarily ceased.

4. Goods may be sold at a loss with a view to *developing prospective goodwill*. It would obviously be impossible for certain types of newly launched enterprises immediately to make a profit on the goods sold. They must wait until a sufficient volume is secured, and it would frequently be impossible to obtain this volume unless prices were kept at the point which will be ultimately profitable, but which at present makes it necessary for the producer to incur a loss. This policy may be a very necessary and wholly desirable one, provided the seller knows definitely what he is doing and can see clearly when and how profits will ultimately be made.

5. Some companies, again, consciously and purposely sell certain *minor products* at a loss with a view to *retaining the goodwill* of their customers. The situation may result from a gradual curtailment of certain lines of goods so that they are no longer profitably produced. It may be due to influence which has been exerted by salesmen who wish to cater to the particular whims of their customers. It is possible that certain low-priced and non-profitable articles are used as "leaders" in order to facilitate the sale of other goods.

Probably all cases of this sort which result in sale below cost of production are conscious attempts to develop goodwill. Each concern must be its own judge as to the wisdom of such a policy. Under such circumstances the losses incurred are regarded as a particular type of advertising. As a rule, however, the policy is a dangerous one and can very easily grow beyond all bounds.

6. Frequently, retailers sell certain articles far below cost merely to serve as "*leaders*" to induce other purchases to be made. This happens particularly during special sales when a few first-class articles are distributed among inferior goods of the same sort in order to attract buyers. Another example is furnished by the "1-cent sales" occasionally put on by the Rexall stores, that is, two articles are sold for the price of one, plus 1 cent. Such sales, of course, usually have a high advertising value, and they lead to the buying of additional products. They are particularly advantageous when prices are falling and trade is dull. They are best suited, however, to those retailers who control the source of supply of the particular goods, or who themselves manufacture the goods sold. They accomplish their results best when the very numerous array of articles not in the one cent sale is carefully brought to the buyer's attention.

7. Closely related to the foregoing is the policy sometimes followed of selling all articles of a given sort at a uniform price notwithstanding wide differences in size. Makers of different articles of apparel, particularly, have followed this practise, as a result of which the very small sizes may be sold at a profit while the larger sizes may even be handled at some slight loss. The theory is that the price fixed will be sufficient to assure a profit on the average item sold. Some companies maintain that it is much more convenient to handle the matter of sizes this way. Any such policy is generally wrong. It is, of course, easier to keep no cost records and to guess at the price. The only safe rule in cases of this sort is to let the price of each article cover its proper costs. When the chief cost of production is for material used, the uniform price policy will probably prove particularly unwise.

8. In the case of *by-products* the question is a mooted one, since it is sometimes very difficult to know what by-products actually cost. Some concerns, as previously mentioned, have even sold the main product below its true cost of production because of the very high returns which they have been able to gain on by-products. Such a policy is usually unwarranted. Also, in determining the price of by-products or joint products, the estimated separable expenses should at least be covered by the price received, and there should also be an allowance for material costs equal to that which would be received if the material were sold, or which would have to be paid if the goods were bought and devoted to similar uses.

9. It has sometimes been found profitable to *sell goods at a loss in one market*. Such instances are found only in international trade where tariff boundaries protect. It has been argued that because of the increased economies resulting from larger scale production certain types of manufacturing concerns have found it advantageous to produce goods in excess of the demand of the home market and to "dump" the surplus on foreign markets at a price lower than the unit costs of the entire product. The alleged justification for this practice, which is by no means so common as is ordinarily supposed, lies in the fact that by increasing the volume produced, unit costs of operation are lowered, but if no more goods are put on the home market the selling price will remain at the original level.

10. It happens in certain lines of industry that production cannot readily be evenly distributed throughout the day or throughout the year. In such cases overhead expenses continue whether goods are being actually produced or not. It may, therefore, be profitable in order to keep the plant in operation to sell goods made in the "off-peak" periods at a price which is only slightly higher than the prime costs, that is, the direct labor and material expenses which enter into the specific product.

The problem of *seasonal goods* is sometimes solved in this way to the benefit of all concerned. Also the practice is recognized and generally followed in the electric light and power business, in which special low rates are made to those who use current for power, or whose demand on the plant comes at a time when there is much excess capacity available. The power business and the off-peak business of electric lighting plants is very frequently billed at a rate per kilowatt-hour which is lower than the average cost of production per kilowatt-hour for all current sold. Yet, inasmuch as the additional sales necessitate no increased plant investment and practically no additional operating expense, except perhaps a little more fuel cost, it is obviously to the advantage of the company to sell current under these circumstances at a rate which will net a slight profit over and above the low additional cost which must be incurred to render the service.

11. It is rather interesting to note further that there are circumstances under which *by selling at a loss a company may reduce its losses*. It is common knowledge that in order to "break even" many factories must operate to at least 60 per cent of their capacity. The actual profits frequently cannot be made until the utilization of plant exceeds this ratio, these figures being used merely for purposes of illustration. This condition results from the fact that with a smaller volume of goods produced, the various supplementary costs, administration and office expenses, general supervision, depreciation, insurance, taxes, interest, and the like, are distributed over a much narrower number of units, thereby increasing the cost per unit. Even though the plant should practically cease operation, most of the expenses referred to would continue without abatement. It is obvious, therefore, that when a plant is being operated below the profit capacity, the *losses* may be *reduced* by selling goods for little more than the actual direct costs of producing those goods. Any margin thus gained will help in defraying the expenses which must be met whether the plant is operated or not. Extreme caution, however, is necessary lest the customer be led to think that the unprofitable

price is the fair price, which in more normal times he will expect to have continued.

12. In times of *rapidly falling prices* it is frequently the height of wisdom to sell for less than their cost goods *already produced*. Thus continued shrinkage of inventory values may be avoided and possible losses curtailed. Many a concern has been ruined as the result of its failure to recognize this important principle. The rule should be not to wait until financial necessities arise, but to take losses at once when prices are dropping precipitately.

13. The *actual or prospective drop in the demand* for a certain line of goods may lead the seller to dispose of a portion of his inventory at a loss even in normal times. Such a policy may not only prevent a greater future loss, but may also serve to unlock working capital already tied up in slow-moving inventory. Similarly, whenever stocks become antiquated they should be cleaned out, even at a sacrifice, in order to free the capital for other purposes. Profits can be made in business only when goods are sold and the investment is turned with reasonable rapidity. This situation explains many of the bargain sales which actually are bargains. The seller finds it more profitable to take a loss on certain articles in order to gain a greater profit elsewhere.

14. Finally, goods are frequently sold at a loss because of the *financial urgencies of the seller*, irrespective of general business conditions. He may have overstocked himself even though his line of goods is perfectly satisfactory. In order to raise working capital to meet his current bills he may be forced to sell a portion of his stock at a loss either direct to the consumer or to other dealers. The final step in this direction is frequently a receivership sale, though some sellers have been able by taking a severe loss to avoid bankruptcy.

Shall Prices Be Uniform? Many interesting questions might be raised regarding the problem of uniform prices and price discrimination. Uniform prices may mean many different things.

1. There may be uniformity as to all customers irrespective of their status or of the quantity of goods purchased.

2. The uniformity may extend only to all within a given class or group. For example, all retailers may be quoted a uniform price, while all wholesalers, without regard to the size of their purchases, may be given another rate. Such differences are commonly met with.

3. There may be uniformity as to territory supplied. The price may be the same for all customers of given class within an entire territory, or geographical distinctions may be recognized in arriving at the price. When the transportation costs are great there must naturally be such differences, or prices must be quoted f. o. b. the factory.

4. A uniform price policy may be followed with regard to the terms of sale, that is, all may be required to pay cash or, on the other hand, may be given an equal period of time within which to make payment. Any departure will naturally result in varying prices actually being paid by customers because of the cash discounts allowed for prompt payment.

5. Sometimes lack of uniformity results through the offering of special concessions for special services, for example, goods may be sold at a lower rate to the dealer who will take the full line of the seller instead of buying only one

product. Again, a special price may be made to those retailers who agree not to handle the goods of a competing producer.

6. Special off season prices are also offered to the purchaser in some industries, and seasonal datings are very common. Such practises lead to a further lack of uniformity.

Quantity Discount. The question of quantity discount is of a good deal of significance to the seller. This should not be confused with the cash discount nor with the *trade discount*. The latter is a device used primarily in order to conceal the actual purchase price of goods from the ultimate customer. Further it makes possible a uniform selling price of the product without actually fixing that price to the consumer, and is useful when sales are made at different prices to wholesalers and retailers.

The quantity discount is given on the assumption that large orders can be more profitably handled than small ones, and the actual discount should be carefully determined in view of actual savings which may result. In practise, it has frequently been found rather disastrous to offer quantity discounts because of the frequent abuses of the terms offered. When prices vary according to the quantity sold, it is possible that through cooperative purchasing or chain store purchases a situation may develop in which the retailer offers to the ultimate consumer a price which is as low as that which the wholesaler can offer to the retailer. The offer of quantity discounts to retailers also frequently leads to overbuying with very disastrous consequences. It is extremely important to outline a policy which will not cause mutual misunderstanding, and which will not result in unjust discrimination between various groups of purchasers. In order to avoid unpleasant difficulties, some sellers, therefore, refuse to give quantity discounts.

Price Concessions. Another interesting question is raised in connection with getting new business. Should special price concessions be made in order to attract new customers? Such a policy has sometimes been openly followed by the seller. More frequently the practise has been merely winked at, while salesmen have, within limits, followed their own pleasure in the matter, frequently offering special price inducements in order to increase their volume. Occasionally the salesman himself has deducted the concession allowed from his own commission. But, however the matter may be handled, this policy is almost certain to lead to difficulties and to cause misunderstandings. The practise is undignified and if generally known will reflect unfavorably upon the seller. Dissatisfaction will arise on the part of those customers who do not receive concessions. Further, if the practice is left more or less in the hands of the salesmen themselves, the possible evils are greatly multiplied because of the irregularities which inevitably arise. While there are possibly a few exceptions any such policy in most lines of business is wholly unsound and savors of the primitive method of arriving at market prices through direct bargaining between customer and seller. Price concessions may sometimes be justifiable in pushing new lines of goods with old customers. They should not ordinarily be given, however, merely to get new customers.

One Customer Only. Again, another interesting problem arises: Should the producer sell to only one customer or to a very small group? Much, of course, depends upon the nature of the business and the relation between the

buyer and seller. Obviously, the seller can afford to dispose of his goods at a lower price if his selling expenses are in this manner cut down. It is dangerous, however, to sell the entire output to one customer unless a very definite contract is made, subject to renewal under mutually satisfactory conditions, which will protect the interests of the seller.

In the meantime the contract should provide for some sliding scale arrangement whereby the price agreed upon might be subject to adjustment in accordance with the general trend of prices for a similar commodity. Otherwise a seller may be in danger of finding himself wholly in the power of the buyer who may force deliveries at unprofitable prices or may refuse to renew the contract after special investment has been made in order to meet his needs. The dangers to the seller are greatly increased if, as is frequently the case, he does not use his own name or brand when selling in large quantities to a limited number of purchasers. When no distinguishing marks are used, no goodwill or independent market for the product can possibly be developed.

Price Guaranties. Another important consideration has to do with the guaranty of the customer by the seller against decline in prices after orders are received or goods are sold. Such guaranties are very common in some lines of industry and may be made under any one of the following conditions:

1. The guaranty against decline may hold good until the date of shipment of an order which has been received for future delivery.
2. The guaranty may extend until the date of delivery.
3. The guaranty may extend to a fixed date.
4. The guaranty may cover the period which must normally elapse until goods are sold.

5. The guaranty may sometimes refer, not to the selling price of the purchaser, but to the future selling price of the one who gives the guaranty.

Ordinarily this guaranty means that when a manufacturer disposes of a commodity at a stated price he obligates himself in the event of a decline in price to rebate to the purchaser, at some future date agreed upon, the difference between the stated price at the date of sale and the reduced price at which the purchaser may be obliged to resell between the date of sale and the agreed-upon date of settlement. When the practice is confined merely to a guaranty which shall end with the date of shipment or of delivery, no serious problems arise. When the guaranty extends beyond this date, however, it is obvious that the responsibilities of the guarantor may become of major significance.

Some of the customary arguments alleged in favor of the price guaranty practice are as follows:

1. Such guaranties are, from the manufacturer's standpoint desirable because: (a) Sales are increased thereby. (b) Seasonal fluctuations can be avoided, due to the advance orders which are secured. (c) Goods can be shipped as soon as finished, thus avoiding warehouse expenses. (d) Larger orders can thus be secured. (e) Payment is frequently made at an earlier date than would otherwise be the case. (f) Cancellations are prevented in a falling market. (g) Market prices in general tend to be stabilized by this practice.

2. The arguments favoring the practice from the wholesaler's or retailer's point of view are such as follows: (a) The guaranty protects them against

loss due to a falling market. (b) It encourages them to place their orders early and thus avoid delays in shipment. (c) It permits the handling of goods by the wholesaler on a smaller margin of profit because of the reduction in risk. This makes possible a lower price to the consumer.

Some of the opposing arguments are as follows: (a) It is unfair to the manufacturer to be expected to protect the wholesaler or retailer in this manner. Since the manufacturer himself is not protected, he cannot afford to assume the risk for those who purchase from him. (b) The practice may tend to keep prices high in a wholly artificial manner. (c) The manufacturer may, as a result of this practice, be encouraged to produce in excess of the probable demand for goods on the part of the ultimate consumer. Due to the readier sales to the middleman he may be wholly misled as to the actual market conditions. (d) The middleman, in turn, may recklessly overbuy because of the carelessness which results from price guaranties.

Obviously there are many sides to the problem, and it is interesting to find that there is wide disagreement on the question among manufacturers, even when engaged in the same line of industry. From the seller's point of view, the policy of guaranteeing against price declines is probably most feasible when the raw material cost is a very small part of the producer's selling price. Under such circumstances the fluctuations in market price will probably be less rapid or violent. However, the customer in such cases would have least need of the guaranty. On the other hand, it has been maintained by some manufacturers that prices should be guaranteed to customers in those products in which the fluctuation will probably be most rapid, as for example, in those commodities in which the cost of raw material plays a very important part. Naturally, the buyer of goods would particularly favor a guaranty under these circumstances.

No definite rules can be laid down with reference to this most interesting problem. Much will depend upon the nature and customs of the business itself, the type of customers served, and the usual terms of sale in the trade. The practice may possibly prevent violent price fluctuations in certain lines of trade. It may also lead to a more even distribution of orders throughout the year. In such cases, the policy would seem to be wholly desirable. In times of uncertainty, however, many new elements enter into the situation. If mutual benefit is received by buyer and seller, the practice justifies itself. If, on the other hand, the risks are all on the side of the guarantor, it will obviously be necessary for him to increase his prices in order to insure himself against losses which may be incurred through his guaranty to the buyer.

Price Maintenance. Briefly stated, price maintenance refers to the policy sometimes followed by the manufacturer of placing restrictions upon the price at which a purchaser may resell an article which is identified by some brand, copyright, trade-mark, or the like. Formerly this practice could not extend far, inasmuch as probably the greater part of all goods sold was not identified in this manner. Recently, however, trade-marked and package goods have been rapidly increasing.

From the manufacturer's point of view such price protection is perhaps sometimes needed in order to prevent the reselling of his goods at a low price for advertising purposes. Frequently, large purchasers have bought branded

goods in quantities and have sold them at a low price with a view to injuring the business of the producer. The manufacturer also alleges that the fixing of a uniform price to be charged the ultimate consumer prevents overcharging and much ill will, which might result from the lack of a uniform price on the same branded goods. There is, of course, much to be said in favor of this contention.

The law dealing with the question of price maintenance is yet somewhat uncertain, inasmuch as many conflicting decisions have been rendered. Probably, however, there has been far too much excitement about the problem. Obviously, if trade-marked goods are not found by the customer to be satisfactory and worth the money which he pays for them, he will buy in preference a non-branded article or the advertised goods of some other producer. It would seem, therefore, that so far as the public interest is concerned, the question might in most cases be left to work out its own solution under competitive conditions.

Another interesting development is that of the "*open-price*" association, the primary purpose of which is to assure the maintenance of uniform prices within a given industry. The single price is arrived at through open discussion and interchange of information without any attempted coercion. To the extent that prices can be stabilized at a reasonable level through such activity, the open-price association is to be commended. It may serve a particularly useful function in disseminating helpful information regarding costs of operation and methods of business among the producers in a given industry.

CHAPTER V

CHOICE OF MARKETING CHANNELS

BY GORTON JAMES, *Vice President, The Thompson and Lichtner Company*

Choice of distribution channels and methods depends primarily on three factors: (1) *cost*, (2) *competitive strategy*, (3) *volume*—sometimes contradictory. Hence the marketing difficulties of many concerns whose executives have considered only one of the three factors in shaping their policies.

Competitive strategy may demand, for temporary periods, sales below costs or distribution expenses out of all proportion to theoretical selling efficiencies. But trouble grows rapidly in such cases unless the executive recognizes the dangerous course he is pursuing, keeps a close eye on his controls, and does not relax his vigilance as long as the battle is on.

For a long time policy, however, it is doubtful if sales below cost can be justified. This statement is made in the face of the existence of such policies—for instance, the carrying of "loss leaders" for the supposed purpose of attracting customers—actually in force in the sales programs of some of the biggest and best-known independent and chain retailers, and manufacturers.

In the final analysis the plan of marketing is best that will produce that volume which, at the cost of attaining it, will yield the greatest net profits in the long run. The optimum volume is seldom the greatest attainable volume and the optimum marketing cost is seldom the lowest possible cost.

As an example of sales below cost as competitive strategy there is a well known chain which has always offered one leader below the cost of manufacturing and distributing it. This policy was an important factor in building up the reputation of the firm, at the outset, as a retail organization which could deliver dependable goods at a surprisingly low price. The policy has been maintained to serve as proof of the "buying power" of the concern.

As it happens the chain has not always had to carry the loss from this policy itself, even though it stood ready to do this as part of its advertising expense. Manufacturers' salesmen, on commission, more interested in sales than profits, have noted the retail selling price of this article and, with a naive faith that manufacturing costs can be reduced to any figure if the boss will permit, have reasoned that their competitor must have reduced his costs and selling price in order to get the business. On such reasoning, salesmen have induced several companies at times to offer this product to this chain at such figures as to take the loss off the shoulders of the chain. The manufacturers explained that by this eleemosynary act they were "spreading overhead" or "keeping the factory running." As a permanent policy, however, that is a dangerous plan. Some of those suppliers have entirely

gone out of existence and perhaps that particular trade will "return to normalcy," but in the meantime prices for that article have dropped below the costs of manufacture for everyone.

Thus, this one chain with this policy on one item has driven one entire section of an industry into chaos and has made itself heartily hated by all in that industry. Whether its policy will prove to have been good for its own business in the long run remains to be seen. So far it has built up for itself a reputation among its customers of great buying power and undoubtedly has quickened the growth of its business. This case is cited because it is an exception, and a prominent one, to the usual experience of companies who sell below cost as a regular policy. It is a case where one of our leading retailers has considered that selling below cost has been justified by competitive strategy.

The Balance between Market and Product. The choice of method of marketing a given product depends on a process which is the reverse of "merchandising." Merchandising consists of selecting, designing, and presenting the product to fit the demand. Each element of a product—quality, appearance, usefulness, price—appeals to or repels the prospective buyer. When one such element is newly emphasized as against another in advertising and selling, new prospects will be added to the market and others lost.

If an automobile is built with special reference to beauty of line, it will appeal to a different section of the public than if it is built with mechanical perfection as the primary offering. Each slight change in model will attract a new group of people and thus shift the market slightly. Successful marketing, therefore, requires not only the adjustment of the product to fit the market but its reverse—the recognition of just what part of the public has potential interest in the given product.

It is not enough to say that most people will buy canned peas when fresh peas are out of season. Some like them sweet, others want them peppery. Some like them large and mushy, others want them small and crisp. Some like them in big cans, others prefer small cans. Some like bright wrappers, other associate bright wrappers with poor quality. The two problems which are least understood today in the marketing of any one of these varieties of canned peas is how to find the persons who like that particular variety, and how to offer it only to them without wasting sales efforts on the others.

Then comes the method of presentation. Some will buy because they always try the latest thing—want to be up to date; others cannot be induced to buy until at least three of their best friends have spoken with enthusiasm of the new product, regardless of the amount of advertising appeal. Some buy a few times and then change to the next new competing product; others are slow to become customers but when caught stay faithful as long as the product is offered. Some demand changes if they are to be kept as customers, others stop being customers if a change is made.

Each change in product, and in its presentation, affects favorably or unfavorably various sectional groups within the market. Recognition of these facts permits sound approach to the first questions in marketing a product. Who are the potential customers? Where are they? Why might

they be interested? Which elements of the product, appeal to which groups in the potential market? And finally, what kind of selling people can reach them best? Which type of retail outlet and which sales technique will sell the most of the products to ultimate consumers at the least cost in the long run?

Elements of Consumer Preference. Professor J. L. Palmer of the University of Chicago made some pertinent remarks regarding such analysis of the consumers which sketch the picture very successfully:¹

Information on family spending habits is so scarce as to require no comment and the question as to what the consumer of today is interested in when he buys commodities is one on which we can but entertain difference of opinion. Some say that style and beauty are the important thing, and that price has become secondary. By others it is pointed out that quality is all-important, that the consumer of today, with his higher purchasing power, demands better merchandise. But the manufacturer of men's quality clothing points out that it is becoming more difficult to sell high-priced clothing, and that men in increasing numbers are satisfied to buy suits in the lower price ranges. The query is also raised as to why installment selling, and the chain store with its "cash-and-carry" appeal, should have grown so rapidly during a period in which the purchasing power of the consumer has been rising. But as evidence of the waning interest of the consumer in price, cases are cited of remarkably profitable sales campaigns based upon a style or service appeal, in which products were sold at admittedly high prices. Out of this maze of seemingly conflicting views about the consumer the problem of the individual concern is to discover what combination of appeals will produce the best results in the marketing of its product. It is probably safe in operating upon one basic assumption, *i.e.*, that the great majority of buyers are interested primarily in value. Extremely wealthy buyers and purchasers of prestige and gift merchandise may in some measure be exceptions. Concerns may often proceed upon a second assumption, *i.e.*, that the consumer is usually a poor judge of value. It is this fact, coupled with the ingeniousness of the seller in manipulating his product and advertising it, rather than any declining interest of the consumer in value, that accounts for most successful sales campaigns in which the intrinsic worth of the commodity is more or less disregarded.

Whether, along with good value, consumers are also interested in style, color, service, quality, etc., is a question of fact in the individual case and the individual manufacturer will do well to find out the facts with reference to his own product. Style and color, while of obvious value in selling women's apparel, are relatively unimportant in marketing men's clothing. Elaborate service, while the main patronage appeal of certain types of department stores, has not in recent years been a suitable basis upon which to build a large retail grocery business. High quality, while generally desired in the purchase of some commodities, is often not desired in the purchase of others. If for any reason at all substantial numbers of people decide they do not want to spend large parts of their incomes on clothing, shoes or expensive foods the only recourse for the manufacturer is to try to dissuade them from their views or to bring his product within the popular price range.

If it is true that the purchasing power of consumers has been rising in recent years it is equally true and perhaps more significant that their spending opportunity has been expanding at a more rapid rate. It is at least conceiv-

¹ PALMER, J. L., Professor of Marketing, University of Chicago, Marketing Executive' Series, No. 66, American Management Association.

able that the consumer is finding it more difficult than ever to satisfy his desire for commodities and that as a consequence he is buying with just as much discrimination and with just as great emphasis on value as ever before. Many, if not most, of the spectacular merchandising successes of the past decade involving all sorts of products—groceries, drugs, automobiles, household supplies and appliances, radio—stand as evidence of the soundness of the proposition that the consumer is interested first of all in value—getting his money's worth. His attitude toward style, color, service, and quality in individual products has been shifting about in the course of time, to the advantage of concerns which have closely followed trends and have adapted themselves to them, and to the great discomfiture of those which have not done so.

The following proposition should stand out in any discussion of the consumer as a buyer:

1. The starting point of every sales campaign is the consumer.
 - a. Permanent sales success can be realized only when one's product and method of selling are in every respect adapted to consumers' desires and habits.
 - b. Adaptation can be effected only when all pertinent facts about consumers are known.

2. Facts about consumers, though they have been greatly improved in recent years, are still far from adequate to suit the purposes of most manufacturers. They can be made adequate only through painstaking research carried on by the manufacturer, the industry of which the manufacturer is a part (especially important when the problem is to sell a product rather than a brand) and by outside agencies such as the government, publishing organizations and other miscellaneous research agencies.

The "Bell-shaped Curves" of Demand. The problem of finding true potential customers can be better understood if the fact that the statistical demand curve always takes the shape of a bell-shaped probability curve. For instance, when all sizes of shoes worn by a large number of men are plotted, the curve looks like Fig. 1. (The height represents the number of persons whose feet are the size directly below any given point on the curve.)

Most men would have feet of the intermediate sizes, at the highest points on the curve, but decreasing proportions would be found to have feet bigger or smaller than those middle sizes until we reach the giants and dwarfs who have feet entirely outside the range of regularly manufactured sizes.

This distribution of demand is true both of lengths and of widths, but the variations are much less in widths, so that the curve is higher and narrower than the curve for lengths. More persons in the same group would have the same width than would have the same length size of feet. (See Fig. 2.)

Both of these curves should be taken into consideration in merchandising—in deciding what to make. A striking illustration of a failure to take all the

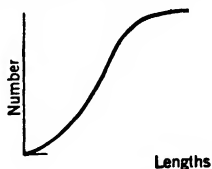


FIG. 1.

Widths
FIG. 2.

facts into consideration on the distribution of shoe sizes and widths occurred in supplying the United States troops during the World War.

Army boots by millions were turned out on the standard schedule of foot sizes which shoe manufacturers by experience know the men of this country to need. But the constant "foot work" of army drill, for these many men who were called from office desks of civil life, resulted in spreading their feet, and shifted the actual curve of widths which were needed perceptibly to the right. As a result a shortage of the large-width shoes began to develop while there was an unaccountable surplus of the small widths. Only an intensive manufacturing drive on wider boots saved the situation from becoming serious.

Price Curves. The fact regarding these bell-shaped curves which concerns marketing, rather than merchandising, is that price range and quality demands also follow the same law. If the prices paid for the shoes now on the men of the country could be plotted the curve would look the same. (See Fig. 3.)

There is a range of intermediate-price shoes which satisfies the great masses. But there are some who will not, or cannot, pay as much—they will buy the cheapest shoes they can find. Others will pay more than the masses.

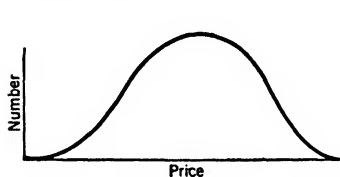


FIG. 3.



FIG. 4.

Quality Curves. Likewise quality is looked for and demanded by people in accordance with our bell-shaped curve. The great mass market does not demand high quality but refuses poor quality. A few persons, relatively, insist on higher quality. Another minority is content with substandard quality if it is cheap. (See Fig. 4.)

It is not necessarily because people are not able to afford the prices of higher quality that the majority of them are in the medium group; relatively few people appreciate refinements of quality in more than a few articles. A mechanic appreciates and demands a high-quality motor in his automobile but may not recognize the difference between good average coffee and the high-quality beverage.

Members of the clothing and woolen industries recognize and demand for themselves the best wools and worsteds. The rest of us do not readily recognize why one suit should cost \$22.50, another \$50.00, and another \$90.00; and if the \$50.00 has a pleasing pattern we may take it, feeling that it is neither dear nor cheap because it is in the middle price range, never know the difference, and be happy in our ignorance.

But a producer should not accept the popular notion that the *high-quality* demand and the *high-price* demand are synonymous. Much "waste in dis-

tribution" arises from this fallacy. A substantial portion of the high-price demand is such from motives of "swank." Cheap goods dressed up in brilliant surfaces will go better with that group than real quality unobtrusively offered. A person operating in the high-price field should recognize the difference between swank and quality seekers and look for some measure of the relative proportions of the two elements in his market. Note the different shapes of the two elements within the bell-shaped curve of incomes. Figure 5 indicates the area of the high-price market in the general price curve while Fig. 6 shows the position of the high-quality seekers in relation to the whole. In both diagrams the shaded areas are exaggerated in relative size so that their shape may be made clear.

It is important to keep in mind that the high-quality group, even that part of it which is able and willing to pay any price necessary to secure high quality, demands value for price. It knows the difference. And probably more than half of the potential high-quality market is not in the high-income group; it buys the higher quality merchandise because it believes it is more economical to do so, or because it indulges in a special "hobby" or pleasure

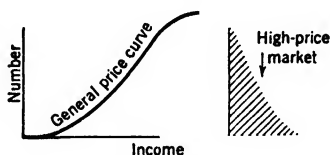


FIG. 5.



FIG. 6

which must be balanced by a special economy elsewhere in the budget.

The average smoker does not enjoy a corona-corona. The great masses of our people would not like really high-grade coffee. It would be a mistake, even if it were possible, to offer goods of high quality to the general public on a mass basis and mass appeal. Fortunately, it is not usually possible; the supply of top quality product in most cases is limited so that it would be physically impossible to sell it on a mass scale. When "everyone" hears of and calls for a new, especially high-quality cigar the makers must either throw overboard their standards of selection from the crop, use middle-quality tobacco and reduce the quality, or else turn a deaf ear to the demand. The result is usually self-adjusting. If they maintain quality the masses do not find the product "worth the price" and it becomes reserved for the connoisseurs. If they do lower quality, they enter the mass group with median quality and again a balance is struck. Cigar experts can name different brands of cigars which have followed each of these courses. They can also name others that have tried to straddle, who have gone out of business probably blaming the United States tariff.

Steps in Choosing Marketing Channels. An intelligent start cannot be made in choosing the channels for marketing a product until the location, the size and the nature of the potential consumer market is thus determined.

Selling through channels not keyed to reach the right final market has dissipated or nullified much selling effort on the part of producers. The balance must be struck between the product in all its details, and its potential market. Not only geographical location of the market but its location on each of the bell-shaped curves of consumer preference should be known before considering the channels through which the market is to be reached.

The question is, given the goal, Which is the best route to take to it? Too many have started at the producers' end and asked, Which is the easiest road away from here? (disregarding whether it leads in the direction of a good potential market or not). In short, beware of the lure of immediate big sales to a distributor. It is the producer's own business to be sure that there is a real and permanent market beyond that distributor. Furthermore, permanent business is usually built up slowly.

Work Backward. With distribution in its present chaotic state, dependable results can more frequently be obtained by working backward from the consumer rather than forward from the producer. Whether to sell, for instance, to a chain store depends more on whether that chain is the best calculated to reach that portion of the market having the greatest potential interest, rather than on whether the chain will give the producer a bigger order at the outset.

The method of working backwards is contrary to general current practice, but it will be found sound by those who use it. It frequently results, however, in radical changes in present choices of channel. On the other hand, were it generally applied, this method of choice might have a helpful influence towards reducing the bumps of the business cycle. Associated with every depression (if not responsible for it) is the clogging of distribution channels. The public does not vary its rates of buying to anywhere near the degree that producers find their rates of selling to vary. For instance in one of the months of 1930 a check-up was made of department store operations in an eastern city. It was discovered that while the stores' monthly sales had fallen off 6 per cent the purchases of the same stores were off 40 per cent.

The difference in degree of variation is caused by imperfect flow through the distributive channels so that minor changes in current consumer buying are greatly magnified when they are reflected back to the original sources. The solution, so far as there can be one, lies in choosing those marketing channels in which the flow will be most free.

The variation in the rate of flow within distribution channels from the source to final consumers may work either way. The sudden growth of chain stores for instance caused an unnaturally rapid call for goods to stock the new stores. Manufacturers have mistaken such sales for actual consumption. One manufacturer got into difficulties from such a mistake even though it arose from a chain of retail stores which he owned and operated himself. The increased rate of manufacture needed to fill his own retail shelves as he opened up new stores, was accepted by the production department as the new normal rate from the retail chain. When the process of opening new stores was completed and there was call only for replacement stocks on actual sales to the public there was a disastrous cut in production orders which found the factory overstaffed and overequipped.

This small sized experience within one organization took place on a large scale throughout many industries during the period of rapid expansion of chain stores. If the manufacturers had watched sales to final consumers instead of initial sales to distributors they would not have got caught with such widespread overcapacity as was discovered in 1930.

The producer may get his goods sold quickly if he can get a distributor to buy them and put them on his shelves; but he will not be called upon for a repeat order as quickly, nor in as great volume in the long run, if those goods do not move readily off those shelves to the consumer. The flow from the far end in the long run is more important than the immediate order at the source. Therefore, *work backwards*.

Advertising to the Consumer. Working backwards results moreover in a radically changed attitude toward advertising. Today a large proportion of so called "national advertising" of consumer goods is aimed at the retailer. If it is addressed to the final consumer at all, it is frequently designed for the purpose of forcing the retailer to carry the line. The real effort is focused on the distributor rather than the consumer.

Advertising specialists have already recognized that the power of the direct appeal to customers is greater in the long run than advertising directed over their shoulder at the retailers or jobbers. They are using such direct appeal copy in many newspaper and car-card advertisements but they encounter resistance on the part of the advertisers. Several selling campaigns have been weakened because producers have paid "lip service" to direct appeal advertising but have not shaped the balance of their selling efforts on the same principle. Such lack of coordinated marketing has often weakened the results of first-class work of both the selling and the advertising executives. Advertising and the activities of the sales department are most effective when they are geared to the same basic principles and their programs meshed throughout to run towards an identical goal by the same route. Unfortunately such coordination is seldom fully achieved, usually because the organizational set-up fails to unify the control of both activities.

Consumer Preference. In choosing the methods best calculated to market a given product, then, the first step is to analyze the final market. Consumer reaction to the product is to be ascertained. The questions for which answers are needed are: Which elements in the product appeal; which cause hesitation; which generate sales resistance? And why?

The survey necessary to get at such information requires trained observers. Probably more marketing programs fail because of inadequate or unscientific consumer preference study than because of any other one step in their development. It is not a matter which can be determined by sending out school children with opinion questionnaires to ring door bells. Opinions of persons on hypothetical questions have proved worse than worthless as foundations for marketing programs. One of the large nationally known manufacturers is at present in financial difficulties because a production and selling program was built on a consumer survey in which thousands of individuals were asked which one of a list of competing products he or she would buy if in the market. The answers proved that the biggest advertiser was best remembered. The trouble came from the fact that these potential consumers and others like

them do not necessarily buy the brand whose name they remember first. The company received a severe jolt when it discovered that fact.

The answer to problems of consumer preference is better contained in the records of actual purchases by consumers than in people's opinions. The opinion does not mean a sale. Ten thousand opinions do not add anything except a multiplication of the error. Why the purchases were made, what points were the contributing factors, are questions which require psychologists to answer. The purchasers themselves may not realize or acknowledge the true deciding factors. In short, consumer preference surveys call for the most skillful fact finding technique of any kind of market research, and should be undertaken only by experienced observers.

The only facts that can be entirely depended upon as indicators of consumer preference are actual sales. There are usually records of sales of products which are already on the market. It is not the gross volume, but the kind of sales and the kind of people who were purchasers that tell the tale. Detailed analysis of the distribution of sales gives light on important factors of consumer preference. Where the buyers come from, or which advertisement brought them in often gives the clue as to why they bought—a more reliable clue in many cases than their own statements.

A new product however does not have sales records. Any estimate of its market is, therefore, a guess and should be used as such. Dependable facts can come only from actual sales. In general, therefore, new products or old products through new channels should be marketed experimentally, and gradually before large operations are planned.

Trial and Error Method of Building Sales Programs. Not only are the facts of consumer preference needed in order to shape the advertising appeal but the facts regarding the type of selling best calculated to reach those consumers are needed for the selection of channels. Who best can sell the product, and by what method, depends on what are the deciding favorable and unfavorable factors in the reactions of the consumers. When it is known what kind of people can be made to buy, and under what circumstances, then and not until then, can the producer decide which kind of retailing will best sell his product. That decision involves finding the selling technique which most effectively moves the goods.

Types of Retailing and the Markets They Serve. When one has located, both geographically and on his bell-shaped curves of demand, the potential customers for his product, the next question is how best to sell these potential customers. How can they be told about the product and how can they be induced to buy? These are two questions which are mutually dependent. They cannot be effectively answered separately by an advertising manager and a sales manager. Let us run rapidly through the most common methods of retailing, making note of the special characteristics which must be considered:—

Stores Granting Credit and Making Deliveries. The right-hand half of the bell-shaped curve of the market, that is the higher priced end of the market, furnishes most of the customers for credit and delivery stores. More specifically they get the business of people who are too busy or not enough interested to "shop" for their purchases. They also attract people

who seek advice on their selections. Retailers who act as expert buyers for their customers can secure a loyal clientele which will stick regardless of the lesser price variations between those stores and their competitors. They may even boldly maintain their general price level above their competitors' in certain instances and still keep their customers. It is not the price that primarily counts since the customers are mostly from the top half of the income curve and the demand is for top-half quality products.

Food stores of this class receive a large portion of their orders by telephone. They are not good outlets for products whose principal appeal is price or a distinctive package. They are not good outlets for cheap lines or low-quality lines although they may sell a relatively small number of such lines quite successfully as side issues to their regular lines.

Furniture stores, on the other hand, necessarily do a credit and delivery business whether they are high-quality or low-quality outlets. Thus the generalization in the first paragraph is strictly limited in its application, although it applies to more than a majority of the retail credit and delivery stores.

Stores of this general class represent the oldest form of present-day retailing. As a result they are more varied in their characteristics than any other group. There are old fashioned stores with strong clienteles. They will probably continue to be dependable outlets for the types of products they carry as long as their present proprietors continue their active interest.

There are other old-fashioned stores which have "gone to seed." It is this section more than any other which has felt the inroads of the chain stores.

There are up-to-date stores run by live merchants, which can compete successfully with any or all chains. Their sales costs may be higher than those of the chains but their market is more certain and secure.

Cash-and-carry-stores are principally in chains but many independents are run on that basis. The appeal is essentially a price appeal. The justification claimed is that cash and carry retailing saves the retailer so much money the store can afford to quote lower prices. The facts that credit losses need not run over 1 per cent, and in the best-managed stores perhaps not over one-fourth of 1 per cent, and that delivery costs on a good business within a restricted area may be relatively small, belie the claims and force such stores onto a price basis in their buying. The result has been a healthy one for retailing because closer attention to prices has drawn attention to many wastes which have grown up in the older forms of distribution. The price showings of cash and carry stores have depended primarily on the elimination of marketing wastes and on close buying rather than on the fact that they do a cash-and-carry business.

Contrary to many popular statements, the chains do not cater to, nor have they marketed successfully to, the lower groups in the bell-shaped curve of income classifications. Poor people are dependent on credit. They will not pay chain-store prices which are frankly median prices, on good dependable median quality goods. Cheap goods for people of low income are not generally reaching their best market when they are sold from chain stores. (Specific exceptions to this general statement are granted.)

Whether *credit* should be extended to a customer or not and how to get the money for the sale if the customer does not pay up—those are retail store management problems. They may not directly affect the producer unless he elects to do his own retailing. But the terms on which a product is to be sold may have a large bearing on its acceptance by consumers. It is very doubtful, for instance, if the American public would buy automobiles at the rate it does if a majority of buyers were not permitted to pay for their cars at leisure. The installment method of selling at retail is of such consequence to the General Motors Corporation that it has organized the General Motors Acceptance Corporation to finance installment sales for its retailers.

The question of *delivery* of goods again may seem to be a retail problem quite outside the interest of the producer, but in the Boston Market a few years ago, after a bitter trade war, it was decided that delivered milk was worth 4 cents a quart more to the consumer than the same milk in the same size bottles sold in cash-and-carry stores. That 4 cents is of great consequence; it represents two different markets neither of which would be adequately reached were milk not offered both ways. It is usually folly to offer expensive food products as regular items in stores which do not deliver.

The retailing methods of the stores through which goods are to be marketed, therefore, are of consequence to the producer who desires to pick his channels of distribution effectively.

Small Merchants. Merchants doing from \$3,000 to \$25,000 gross business a year have a definite place in the distribution world. No retail agencies are better fitted to handle the distribution of items on the lower slopes of the price and quality curves to the lower slope of income groups. In localities where these stores are to be found, no other types of store are usually able to exist and compete with them successfully.

By Robots or Vending Machines. Any standardized article to be sold to mass markets in the lower half of the income curve, which can be packed or delivered in a standard package at a price represented by a coin in common circulation, which does not require special handling or storing, which will not spoil rapidly, which does not call for consumer selection, can be sold from a vending machine. Public acceptance of the product at the price asked must be assumed. Demand, therefore, must be adequately stimulated prior to offering in a vending machine.

Mail-order Selling. Articles of proven or dependable nature, accepted "national brands," goods whose nature may be adequately described in terms of known standards, goods made by manufacturers of established reputation, in short, goods which the purchaser feels can safely be bought without seeing, by description only—such goods can be sold by mail. The market to which they can be sold is almost entirely included within the middle-income groups. Economically-minded people, and people who are not satisfied with the retail stores in their marketing area are potential mail-order customers, provided they believe that they are thereby getting those goods at a lower price than they would otherwise have to pay. Thus, the lists of goods which can be sold by mail are restricted and their markets strictly limited. Incidentally, selling by mail can be done more cheaply the larger the volume. Mass selling makes possible factory efficiencies in handling mail and making shipments.

Two independent mail distributors have grown to such large sizes that their own names stand, within limits, as the guarantee of their products, thus greatly enlarging the list of products which they can sell. Even they, however, have restricted markets which have become still more restricted since good roads, automobiles, and more leisure have made it possible for rural dwellers to shop in large centers.

Pushed by the financial world ever to expand their sales, however, and believing the limits of the mail-order business under present conditions reached, both of these large companies have sought the required increase of gross business through opening chains of local general stores.

Producers seeking marketing outlets should recognize the fact that the type of goods best sold through general stores is not the same as those best sold by mail. There is some overlap, to be sure, in the list of goods which may be sold either way, but the producer choosing his marketing channel by the process of working backwards should ascertain whether his goods are to be sold by mail or from retail counters.

If a given product is saleable by mail there remains the choice of whether it can be sold best through a mail-order house or direct. The answer depends, first, on whether or not that product needs the added guarantee of the name of the large mail-order house and, second, whether or not the sales, if handled direct, would be large enough to carry the overhead, the advertising, and the expense of the necessary organization.

Canvassers. Some items must be shown and explained before sale is possible. Printed words are not enough. Taking the goods around to show to potential buyers costs more, to be sure, but on items which require showing or explaining, it is effective. So much so that two well known and highly successful marketing programs have been built around house-to-house canvassing. The successes led to an increase in the use of such selling and the development of direct-to-consumer wagon selling some of which is apparently successful but much of which has defeated its own purpose by pestering the housewife too far. There are limits to the amount of house-to-house selling which any area will stand.

Choice of Type of Outlet. Through what kind of store a given product can best be sold next requires study. It is not to be answered simply by finding out what class of stores usually handle the given line of goods. There is almost no general class of stores which can be designated that would not contain individual stores somewhere in the United States selling any known product, sold anywhere at retail.

That condition has probably been brought about by the common belief that the more outlets are used the more sales will be made. Unfortunately that is not true for many classes of goods. Furthermore, distribution costs increase rapidly as more outlets are added. It does not pay to add outlets unless they produce a profit for the supplier. Products which require any of the special techniques of selling may even experience decreases of total sales when every Tom, Dick, and Harry offers them.

Moreover, there is a constant shifting of the flow. The mass flow of books, for instance, may at one time be through book stores; at another, through department stores; and at still another time, through drug stores. Shifts

of popular fancy, changes in the sales technique or layout of one or another class of stores, changes taking place in jobbing are each adding to the rate of flux. One must keep pace with what is going on or he gets hopelessly behind. The distributor who is one jump ahead of the mass, or who leads in bringing about a change, is the one who gets the reward in profits (unless he guesses wrong and gets his reward in red figures).

People buy in masses. All other factors equal, it is cheaper to distribute and find the customers for a given product through the channels regularly used for the mass movement of like goods, than to establish special channels for the single product. But people buy many things and in many different kinds of stores and consequently there are occasional opportunities to reach new markets by utilizing the distribution machinery of entirely different products or by making use of different types of outlets than those regularly used for competing products. In other words, it often pays to experiment; it certainly pays to keep alert.

The Various Kinds of Retail Stores. There are estimated to be about 1,500,000 retail outlets of all kinds in the United States not including at least another half million of little retail stands—roadside vendors, front-parlor shops, shoe-shine stands, and the like—all doing retail business. Of the 1½ million about three-fourths are independent retailers and they probably do about 55 per cent of all the business.¹

Having decided what methods of presentation will best reach the potential market for a given product, the next question to ask is which specific types of retail stores to use (unless, of course, it has been decided to sell by mail or by canvasser). There follows a list of the various types of retail outlets arranged by the classifications used in the questionnaires of the census of distribution:

Automotive group.

Motor vehicle dealers (new and trade-in but not including used-car establishments).

Accessories, tires, and batteries.

Filling stations.

Motorcycles, bicycles, and supplies dealers.

Garages, repair shops, gas, and oil.

Food group.

Bakeries.

Candy and confectionery stores.

Dairy products, eggs, and poultry.

Delicatessen stores.

Fruits and vegetables.

Grocery stores.

Grocery stores with fresh meat departments.

Meat markets (including fish).

Milk dealers.

Other food stores.

General merchandise group.

Department stores.

General stores.

Dry-goods stores.

Variety, five-and-ten, and to-a-dollar stores.

¹ Estimate by Prof. Paul H. Nystrom of Columbia University.

Apparel group.

Men's and boys' clothing and furnishings (including hats and caps).

Women's and children's ready to wear and accessories.

Millinery.

Specialty shops.

Men's, women's, and children's clothing stores.

Other apparel and accessories.

Shoes (men's, women's, and children's).

Lumber and building group.

Lumber and building materials (exclusively retail).

Hardware stores.

Electrical shops.

Heating and plumbing shops.

Paint and glass stores.

Furniture and household appliances.

Floor coverings, draperies, curtains, and upholstery.

Furniture stores.

Household appliance stores.

Other furnishings and appliances.

China, glassware, tinware, aluminumware.

Restaurants and eating places.

Restaurants.

Cafeterias.

Lunch rooms.

Lunch counters and refreshment stands.

Fountains, soft-drink places.

Other retail stores.

Book stores.

Cigar, cigarette, and tobacco stores and stands.

Coal, wood, and ice dealers.

Drug stores.

Feed stores, farm implements, and farmers' supplies.

Florists.

Gift, art, and novelty shops (including souvenirs).

Jewelry stores.

Luggage and leather goods.

Music stores, pianos, radios.

News dealers.

Office, school, and store supply and equipment dealers.

Opticians.

Sporting goods, athletic and playground equipment.

Stationers and printers.

Seeds, bulbs, and nursery stock.

Not otherwise specified.

Second-hand stores.

Automobiles.

Tires, accessories, and parts.

Furniture.

Pawn shops.

Clothing, shoes, etc.

Other second-hand stores.

The Census Bureau recognizes half a dozen definite types of retail organization:

Single store independents.

Two-store multiples.
Three-store multiples.
Local chains, four and over.
Sectional chains.
National chains.
Other types of organization.

Which types of stores will present any given product most effectively to those groups of people who constitute the best potential customers? That question can be answered only in terms of particular goods. It is different for each item; it may even be different for different sizes or styles of a single item; it may be different for the identical item at different times. No generalized answer can be made. But before a producer tries to decide which intermediate channels of distribution to use he should select the kind of retail selling, and the types, classes and locations of retail stores which his product demands. Then he is in a position to pick the channels best calculated to reach those retail outlets.

Choice of Intermediate Channels. Picking the most effective retail outlets is usually a difficult step because the reasons for choice are little understood. But when that choice has been made the next step falls into place fairly readily. In each trade there are fairly well-defined channels. In general it may be presumed best to use them although at present changes are taking place so rapidly in many trades that it may not be at all obvious which methods of distribution will shortly prevail.

It is usually expensive as well as uncertain, to distribute any product to a selected class of retailers by some method not commonly used for their particular group. For instance if it has been decided to distribute an article classed as stationery to dry goods stores the latter would probably be more effectively reached through dry goods jobbers than through stationery jobbers.

Moreover it is probable that the jobber who is well entrenched in his territory could sell more effectively to his regular retail customers than the manufacturer could sell direct, unless the retailer is accustomed to buying direct or unless he is dissatisfied with the jobber's service. Such is the generalization but the fact in many trades is that the jobbers have encouraged or permitted manufacturers to send "missionary salesmen" to their retail customers and have fallen down in other services until the retailers have learned that they can get service direct better than from the jobber. The jobber has pushed this idea along, moreover, by carrying less and less stock and leaning more and more on his suppliers for quick deliveries so that in some trades the jobber's appearance in a sale at all may be merely an added expense and bother in a matter better handled without him. His continued existence is merely a matter of courtesy and charity (sometimes wrongfully called "loyalty").

Between these two extremes of usefulness and uselessness are found most of the jobbers. The important factors on which must be based the decision whether to use them or not are (1) just where they are on the scale and (2) in which direction they are moving. Furthermore, what is said of jobbers is also true of each of the other agencies of distribution—agents, brokers, factors, converters, commission men, traders, and so on.

List of Intermediate Channels. In general a producer may have the following choices for his primary distribution outlet:

A. With his own sales force.

1. Direct to consumers.
2. Direct to retailers.
3. Direct to wholesalers or jobbers.

B. Through a sales agent or factor who undertakes to dispose of the entire product.

C. Through brokers to wholesalers or industrial consumers.

D. Through wholesalers to retailers by the process of supplying the former with goods on consignment (or through retailers to consumers by the same method).

The four major groups represent increasing degrees of scattering the responsibility for sales as you go down the list. Other things being equal these channels would naturally become correspondingly less and less effective. Unfortunately, however, other things are seldom equal so that generalizations would be misleading. Consideration should be given to each possibility in choosing the marketing plan for any given line of products. In general the choice should be made in terms of profits. There are three factors which control profits: (1) cost, (2) volume, (3) price. That channel should be selected which will give the greatest net profit keeping the cost of selling as low as possible and both the volume and the price (that is the net sales price received by the producer) as high as possible.

Increasing the *cost of selling* may result in greater *volume* up to a certain point after which further increases in cost will no longer be effective. Decreasing the *price* likewise will often result in increase in *volume*. Increasing volume beyond its normal point, at a given *price* level, will cause *costs* to increase faster than the additional returns from the greater sales. The aim in choosing marketing channels is to discover that adjustment of the three factors which will yield the greatest net profits. Unfortunately, executives frequently miss one or another of the variables in the equation, sales managers are seldom given the four-variable view of their problem and salesmen never are permitted to consider any but the volume variable. These facts partly explain why there is so much unsound marketing in American industry today.

There are special considerations which should be taken into account with each of the choices of intermediate distribution channels:

A. *Selling by the company's own salesmen* permits control which is not attainable by any of the other methods. Under this system only can the company insure *greater* effort when sales are low and *less* effort when they come easily. All selling psychology tends in the opposite direction; efforts usually are relaxed when selling becomes harder, but all the salesmen jump into their work enthusiastically when sales come easily. This is partly human nature and partly the result of the common but unscientific system of paying salesmen either largely or wholly on commission on net sales.

Advertising and selling efforts can be coordinated when both are controlled under one executive. Sales planning or budgeting, the use of sales quotas and control over sales territories are completely available only when the management is unified.

Economies of operation are being introduced on the use of directing, routing, and supervising of salesmen and are forcing competitors to follow.

1. *Selling direct to consumers* is a difficult and expensive game for any manufacturer. The unit sales must be big enough to cover the costs of making them. If the unit margin is enough to absorb the sales effort, or if the volume is naturally so large that mass selling methods can be used and thus unit costs reduced, then some form of direct-to-consumer selling may be devised which will be successful in terms of net profits.

The three principal methods open are (1) by mail, (2) by direct canvass, (3) by company-owned retail stores. The last has been successful when the company has enough of a line to justify a retail store. The store may, of course, handle lines from other manufacturers, but the plan has seldom proved successful unless the lines of the company which owns it represent the bulk of the store's business.

Direct selling by canvasser and by mail have already been discussed. They should not be attempted unless the volume is large.

2. *Selling direct to retailers* is coming more and more into popularity as retailers are learning to buy. The chains have shown the way. Retail cooperative buying is growing faster than chain buying. Already there are more retail grocery stores associated in cooperative buying organizations than there are chain stores but their volume of sales has not yet caught up to that of the chains.

Department stores have long bought direct. Now chains of department stores are being formed for the purpose of demanding lower prices on larger-volume purchases. From a cost standpoint such lower prices are justified only if the buying is done in such a way as to decrease the cost of selling on the part of the suppliers. So far chain department stores have usually proven more costly, rather than less costly, to sell to, because each unit has had to be sold just as effectively as ever and the head organization is merely an added hazard for the task of selling.

Recently one manufacturer, figuring selling costs, found that sales to the largest department store cost more than to any of the smaller ones, because after the sale was made the goods were ordered out in small lots and more service required on each than was demanded by any of the smaller stores. Yet the big one demanded a special discount. It was decided that it did not pay to seek his business even though it did represent considerable volume.

Chains buy direct and demand greater discounts than granted to wholesalers. Whether or not they are entitled to such discounts is a matter for argument. Whether or not a manufacturer should sell to them with extra discounts should be answered first in terms of the net profits equation; if they lower the cost of selling to them and increase volume sufficiently they may justify the lower net return to the supplier; second the supplier must face the question whether or not he is taking extra risks by getting "too many eggs in one basket."

Some items, notably mayonnaise, yeast, and coffee, are being successfully marketed by wagon direct to individual stores, independents as well as chains. In some instances the wagon routes are owned and operated by the manufacturer. In others, especially in Texas and Oklahoma, wholesalers are

establishing wagon routes and developing the new form of wholesale distribution. This is too expensive a method to be used except in the distribution of large volumes of small-unit items which are to be found principally in food lines. It may prove of importance in the distribution of quick-frozen meats, fish, and fruits as the use of this process grows.

3. *Selling direct to wholesalers or factors* is the traditional standard form of distribution. It is, however, undergoing a severe test and many trades are eliminating it as an unnecessary step in distribution. The principal justification for wholesalers was formerly found in the geographical necessity of having stores of goods at each principal city for distribution to the retailers in the city and vicinity. The speeding up of transportation has greatly reduced the need for such stores, at least at points east of the Mississippi River and north of Washington, D. C. where twenty-four hour delivery is possible so that stocks at the factory are often sufficient to meet hand-to-mouth buying requirements.

Furthermore, there has been a large proportion of wholesale houses which have fattened on easy times and have degenerated into order-taking establishments. The necessity for doing real selling has driven wide-awake manufacturers to send out missionary salesmen to get orders for their wholesale distributors. Obviously there is a limit at which it becomes cheaper to do the business direct than to pay commissions to wholesalers who neither stock adequately nor sell effectively.

In spite of these conditions, which are growing, it should be recognized that the bulk of the so-called "consumer goods" still goes through wholesalers. It should also be recognized that many wholesalers have seen the trend towards direct-to-retailer selling, and the causes therefore, and are taking steps to justify their continued existence. They are improving their selling methods, and they are forming "cooperatives" and constituting themselves the buyers for "member" retailers. Such organizations are eliminating many unnecessary wastes of competitive selling and by cutting the costs of distribution are putting themselves in a position where they can market the goods cheaper than the manufacturer can sell direct to the retailers.

The existence of modern wholesalers scattered among the old-style wholesalers makes it necessary to look into conditions in each territory separately. Many manufacturers are well advised to sell by one method in some places and by another in others, watching for the new crystallization of distribution methods before committing themselves to definite policies.

B. *Contracting with a sales agent or factor* to sell the entire output of a factory, the old typical method of cotton mills, still widely used in the textile industry and some few others, is a holdover from an economic era which has passed. A century ago when the textile mills were being organized it was generally held that factory managers and sales managers were entirely different kinds of people who could not understand each other's problems and who operated better independently of each other.

Now we are alive to the necessity of coordinating the production and sales programs. Independent operation seldom works successfully. Most of the independent sales agents or factors have tended to give the factory too much to do in prosperous times and not enough in bad times. In ordinary times

moreover their tendency is to push the easily moving lines at the expense of perhaps more profitable lines for the factory. Efforts to control the situation have usually resulted in friction rather than better coordination.

Contracting with an agent to market the entire production is an easy way for the factory organization to "duck" the problems of selling and consequently many of the old style arrangements still hold on. Only in an occasional instance, however, is the plan working with sufficient satisfaction to warrant continuation.

What is true of sales agents also holds in large part for manufacturing companies having their own sales organizations, but keeping their sales executives apart from the production executives, perhaps in different cities. The incentives generally used are not calculated to secure the cooperation needed between the factory and the sales organization.

C. Selling through brokers is next of kin to having one's own salesmen on commissions based only on net sales, except that the control over the broker's salesmen is lost completely. In either case the selling effort goes primarily to the easiest selling lines which are often the lines in which there is the least profit. This tendency can be counteracted to some extent with company salesmen but is entirely out of control with brokers. There are certain staple goods, however, where such control is not essential and in such few cases the use of brokers may be adequate. There are other cases where the volume of sales are not sufficient to warrant the maintenance of salesmen on full time and in certain instances of this nature the use of brokers again may be justified.

A warning however should be made at this point. Where sales are thin and scattered so that the use of full time salesmen does not seem justified in a given territory it often proves too expensive to sell at all in such territory. In such instances it is usually desirable to consider the possibilities of more intensified selling in concentrated areas and the discontinuance of scattered sales efforts.

Only an analysis of costs, and experiments with the possibilities of volume to be attained by each method, will reveal the better choice of marketing technique.

The economies being introduced in controlled selling based on market analysis, sales quotas, salesmen's routing, and modern forms of salesmen's compensation are making the inefficiencies of the brokerage form of selling stand out sharply in contrast with the use of company sales forces.

D. Selling on consignment has always been done but the idea has lately come into more prominence as a scheme to control resale prices. Certain manufacturers who have been bothered by cut prices on their products offered by intermediate distribution agencies have experimented with this form of selling.

One of the few apparently successful instances of use of this plan is on a minor item sold in drug stores. Exclusive contracts were made with some 200 selected distributors which included an agreement on their part to report inventories of stocks on hand once a month. Later, when they were given the option of buying outright or taking goods on consignment, only eight jobbers elected to change to outright buying.

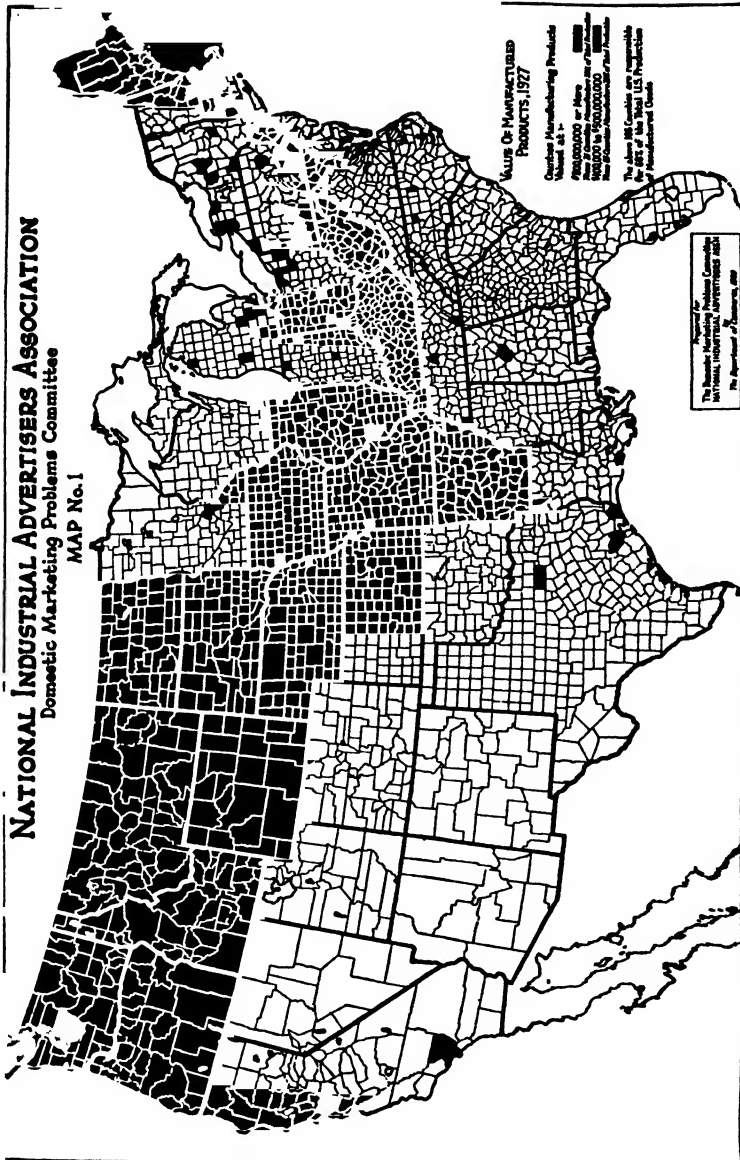


Fig. 7.—County outline map of the United States. (By permission of the National Industrial Advertisers Association.)

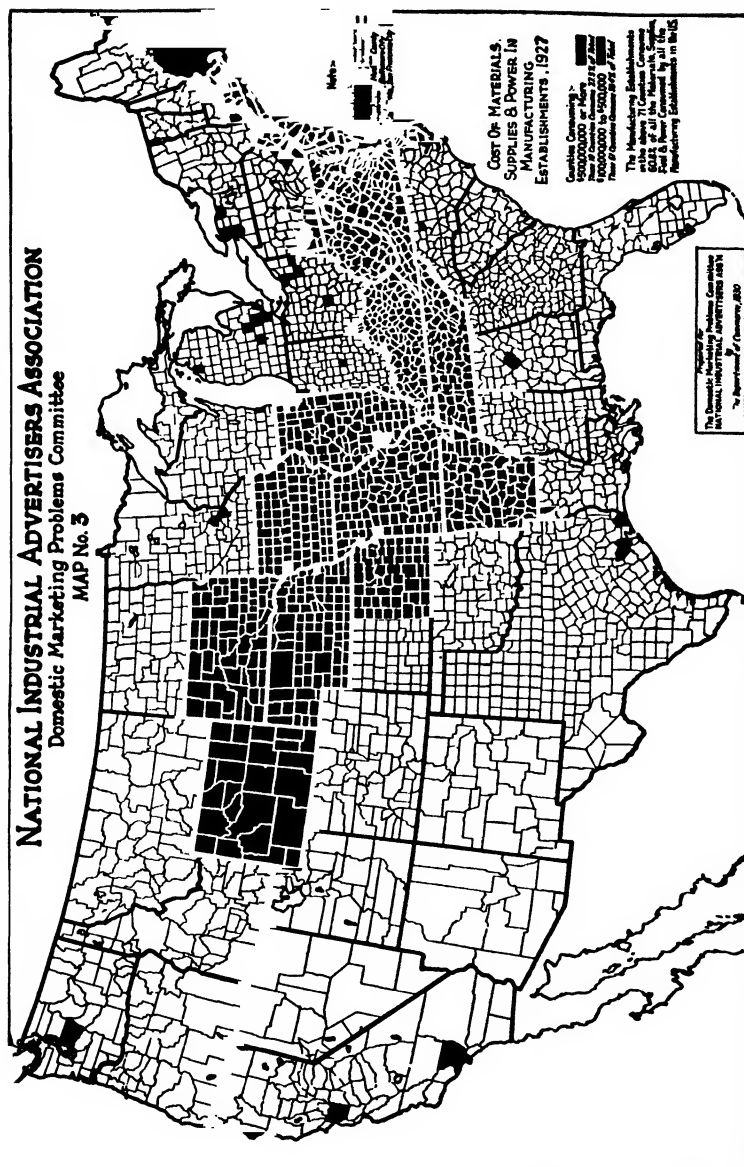


Fig. 9.—County outline map of the United States. (By permission of the National Industrial Advertisers Association.)

The difficulties lie in the fact that jobbers who handle goods on consignment are legally agents of the manufacturer and he becomes responsible for their acts. He has little control, however, over them. Furthermore, the jobbers' stocks are inventory of the manufacturer. There are heavy carrying costs, but again there is little control. Experience of some users of the consignment method of selling is that an increase in price will bring in large volumes of predated sales reports from the consignees, while drops in prices will bring to light unsuspected volumes of inventory in their hands. Manipulation of consignment stocks by the agents is too easy to be avoided in all cases by any known method of control.

Selling at retail on consignment is also practiced, usually accompanied with the use of "hidden demonstrators." This plan has been used quite extensively at cosmetics counters in department stores. It is in effect a form of selling direct to consumer, but is included at this point because the consignment element is of more importance than the direct selling.

It should be noted that the consignment method is usually popular with distributors because it supplies them with stocks for prompt delivery without carrying charges and without their having to assume the market risks on price fluctuations.

Industrial Markets. Any of the above kinds of channels of distribution may be used in approaching industrial markets. There is an added factor, however, which modifies, for industrial goods, many of the conclusions which might be reached for the marketing of consumer goods. This special factor is the concentration of the market. There are 3,073 counties in the United States. According to the Bureau of the Census a quarter of the total materials used by the industries of the country are used in 8 counties. One-half the total volume of purchases are in 37 counties and three-quarters in 143 counties. Of the total production of manufactured goods, 83 per cent is carried on within 345 counties (see Figs. 7, 8 and 9).

With such concentration the costs of selling can be greatly reduced. Sales effort can be directed to compact territories and the machinery of marketing correspondingly simplified.

The So-called Marketing Revolution¹

The so-called marketing revolution of the last decade is not a revolution in the sense that the characteristics of the movement and beginnings of the movement took place within that period. The changes which have taken place in the marketing structure and organization are no different in kind than changes which were taking place before the war.

The distinction between the two periods lies largely in the rate of change. In all lines of business the characteristic of the past decade has been increased rapidity rather than novelty of change. This point was emphasized in the report of the Committee on Recent Economic Changes. The development of chain stores since 1920, the development of the cash-and-carry wholesaler, and extension of the buying syndicates involve movements which were known in the prewar period, but the rate of development has been much more rapid in the past ten years than earlier. This acceleration of change is equally

¹ From TOSDAL, HARRY R., "Trends in the Manufacturer's Choice of Marketing Channels," Consumer Marketing Series, No. 2, American Management Association.

true in the marketing organization, and had had decided effect upon the calculations of manufacturers in their choice of marketing channels.

The manufacturer of today who is confronted with the problem of choosing marketing channels will find himself compelled to pay special attention to three general developments of the past decade:

The first of these is the result of a variety of factors that may be expressed by the phrase "growth in the intensity of competition among sellers." There seems to be an increased intensity of competition among sellers which has been brought about by a diversity of developments:

1. The increased capacity of plants as the result of construction of new plants, of new processes, and of improved machinery, management, and transportation. The result has been an enlargement of productive capacity at a rate which has exceeded in many lines the rate of increase in consumption capacity as limited by income. The tire industry may be cited as an example. Change in production management, new processes, and the use of new machinery have made it possible to develop output to 8,000 tires a day in a plant that a few years ago produced less than 5,000.

2. Competition has increased in intensity likewise as a result of increase in the number of industries which are competing for a share of the consumer's dollar. In other words, both intra- and inter-industrial competition appear to have increased in intensity. There are, of course, other factors which tend to make competition seem more or less intense, such as the changes in purchasing power due to rate of employment, changes in price levels, and certain types of changes in consumer demand.

The second significant feature of the so-called revolution has been the growth of large-scale buying. In studying the distribution organization, we notice the increase in the rate of development of large scale buying through several types of organizations, such as chain stores, large department stores, voluntary associations of retail merchants, buying syndicates, as well as larger-scale buying as the result of mergers and consolidations.

Large-scale buying existed and was developing before the World War, but the growth since 1920 seems at this close range to have been much more rapid, as affecting a wider range of commodities and commerce and a wider group of manufacturers. The manufacturer of a grocery product today finds himself attempting to sell to independent wholesale grocers (who may be combined in an association), to chains of wholesale grocers, to wholesale grocers with special contractual arrangements with a group of retail stores, and to a decreasing number of small independents both in the wholesale and retail field.

An examination of the field will emphasize the importance of the development. Large scale buying by retail stores becomes a concrete reality when it is reported by the Commercial Service Company that on July 1, 1930, there were 8,206 chains in various fields with an average of 25.7 units each or a total of 211,159. Only about 20 per cent of these have reported to the Federal Trade Commission, but they represent approximately 31 per cent of total outlets and an even greater percentage of total sales.

In the grocery trade the development has been relatively largest, since 1,025 chains control over 80,000 units, an average of 78.5 units per chain. It is estimated that regular chains control 35 per cent of the grocery trade. In addition to the regular chains in the grocery trade, there are also the voluntary chains of several types. According to a recent report of the Food Research Institute there are in the United States a total of 551 voluntary or cooperative chains, with 59,640 members. From the viewpoint of the manufacturer, the characteristics of large-scale buying are likely to appear

in dealings with voluntary chains whatever the form, since contracts generally limit the manufacturer's liberty to deal with member retailers. Since voluntary associations are estimated to control 25 per cent to 30 per cent, the two types of large-scale buying control a total of 60 per cent to 65 per cent of the retail food distribution. While the percentage is unusually large in this particular field, we cannot overlook the fact of increased importance of chains, mutuals, buying syndicates, and similar organizations in other trades.

The increase in concentration of buying power, is therefore, evident. The significance of such concentration for the manufacturer who is choosing marketing channels is likewise evident.

Large-scale purchasers tend to demand direct dealing with the manufacturers. As a consequence, the pressure exerted by large-scale buying is toward shortening of the process when the large-scale buying develops in the retail trade. Today the manufacturer finds himself confronted with relatively few large-scale buyers; whereas formerly he dealt with hundreds or thousands of small-scale buyers.

Policies of many of the large-scale buyers, namely, limitation in the number of products handled, purchase on specification without regard for brand, and insistence upon low prices are all influences making toward integration on the part of the manufacturer. When markets become so concentrated, the manufacturer's independence becomes as seriously threatened as did the retailer's become when full line manufacturers insisted upon control of the independent retailer's operations.

Last, but not least, of the factors which affect a manufacturer's choice of marketing channels, is the speed and certainty with which consumers now make their demands known, respected, and effective. Technical developments of communication, the progress of education, the rise in the standard of living, are a few of the factors responsible for this change—again an acceleration rather than a change in type. The fact that consumer demands are now much more effective, in other words, that the consumer takes what he wishes rather than what is offered to him, imposes upon the manufacturer the necessity for providing in some way or other for a contact which will insure that his product and his policies are in accord with that which the consumer desires.

The general developments in the marketing organization during the past decade have certainly increased the pressure toward more direct and speedy functioning of distribution systems. This basic tendency seems to be either to shorten the channels for distribution of consumer goods or to adopt compromises or agreements which will yield the same results of closer contact with the ultimate market. Marketing functions cannot be eliminated but a more direct and simple set-up for performing those functions will be the outcome.

CHAPTER VI

SETTING THE SALES QUOTA

BY C. FREDERICK HANSEN, *Director of Standards, W. T. Grant Company*

The preparation of sales quotas is described in the following pages under four main topics:

1. Purposes of sales quotas.
2. Procedure for developing sales quotas.
3. Factors considered in determining sales quotas.
4. Modification of sales quotas during the operating period.

The process of setting quotas will be outlined as far as possible in a typical or representative way, so as to indicate more than the present practices of one company or one line of business.

1. Purposes of Sales Quotas. Before going about the work of setting sales quotas, it is well to define the main purposes which they are to serve, or the uses to which they will be put. The quotas can then be made instruments for accomplishing those purposes. There are so many possible roads and lanes to follow in preparing sales quotas, that an exact statement of purpose will aid in keeping to the road and reaching the desired destination.

Some of the uses for sales quotas may be summarized as follows:

a. To designate a goal to be reached, on which all the members of the organization are agreed. This unifies their work, and stimulates them to greater effort.

b. To measure efficiency. At the end of the period, actual sales may be compared with sales quotas to show how successful each part of the sales organization has been. Such comparisons may aid in questions regarding salary increases, promotions and transfers of men, changes in rank or responsibility, and plans for supervision of sales units.

c. To provide standards of performance, which will guide the sales forces during the period of the quotas.

d. To control the amounts to be invested in capital expenditures. A certain ratio of sales to each dollar invested may be required.

e. To control expenses. Each kind of expense, or all expenses, may be kept within certain bounds expressed as percentages of proposed sales. Advertising expense, for example, may be so controlled.

f. To determine how large a sales force, or what kind and organization of sales personnel is desirable. A program of recruiting and training salesmen may be based partly on sales quotas.

g. To provide a basis for compensation. Salaries, as well as commissions and bonuses, may be determined with the use of sales quotas.

2. Procedure for Developing Sales Quotas. There are usually three stages in the process of preparing sales quotas:

a. The preliminary stage in the main office, during which the basic plan and main sales policies are formulated.

b. The developmental stage in the field, during which the selling personnel make estimates of sales for quota purposes or revise or review the estimates furnished them as tentative quota figures.

c. The final stage in the main office, during which the quota estimates as modified or suggested by the field forces are reviewed, checked, compared with other parts of the operating budget, and finally issued to the organization for use.

This description of the process indicates that sales quotas, when completed, represent a mingling of estimates and judgments derived partly from the main office and partly from the field. Usually both viewpoints are needed: the main office for its grasp of the total situation and prospects, the field for its close knowledge of customer needs, sales difficulties, and sales possibilities. The circulation of quota estimates among the field forces has the advantage, also, of increasing the sense of proprietorship by giving some voice in quota settings to those persons who must carry out the work of finally attaining the quotas.

The size of the company and its type of organization will of course affect the assigning of powers and duties regarding sales quotas to the main office and to the field forces. In the case of large companies with highly developed district offices, the entire detailed process may be delegated to those offices, and policies and total summaries only may be retained in the home office.

The type of sales campaign to be conducted also affects the quota setting procedure. For example, a certain grand total amount of sales may be decided upon, more or less arbitrarily. The attaining of this total is assigned as a task of the whole sales organization. Then the detailed process of quota setting consists of dividing and subdividing properly the total amount, so that each unit or each individual must secure his fractional share of the total sales requirements.

The typical sales quota procedure, however, involves a series of appraisals in which both the home office and the field forces participate, passing through the three stages outlined above. In a more specific way, the development of sales quotas follows the routine depicted in Fig. 1: Course of Development of Sales Quotas.

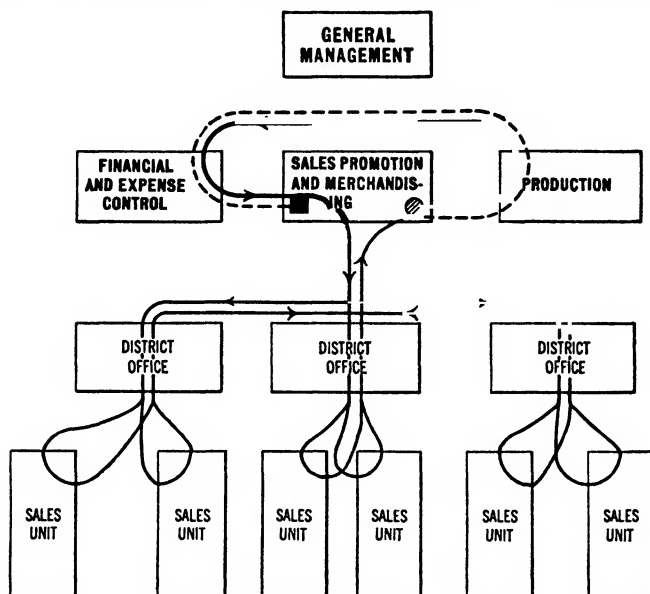
The steps in this procedure as indicated in the chart may be summarized as follows:

a. The sales manager after consultation with the general manager, prepares a general outline of sales plans and strategies for the period to be covered by the sales quotas, indicating proposed total sales by districts and by lines or commodities and showing the proposed percentage of increase in each classification.

b. His outline is discussed in conference or sent successively to the other department heads in the main office, who modify it in the light of com-

pany requirements regarding finance, expense control, production, and merchandising.

c. After the general plan is agreed upon, the sales manager's office draws up work sheets for sales quotas, arranged for convenient use by the field forces for making their estimates for sales quotas. Accompanying these



Symbols:



Origin of sales quotas

— First stage: preliminary stage in the main office, during which the basic plan and sales policies are formulated

— Second stage: the developmental stage in the field.

- - - Third stage: the final stage in the main office.

Completion of sales quotas.



After completion the final sales quotas follow the outward course shown in the second stage in being issued to the sales units.

FIG. 1.—Course of development of sales quotas.

work sheets may be some useful aids, such as last year's sales for the respective field units; company averages showing the percentage of total sales secured on each commodity or line; program of promotional drives; merchandising changes, as price changes, and other information. The design of the work sheets should be such as to facilitate the computing of totals and cross totals.

d. These forms and information are sent to the field executives who review the estimates for the total division or district and for each unit therein, and add comments or suggestions for the benefit of the individual salesmen or managers of the primary sales units.

e. Individual salesmen or managers of the primary sales units enter their sales estimates on the sheets in the light of both the data furnished them and their own local experience.

f. They forward the sheets as filled in to the field executives who review and revise them and compute the proposed sales for the whole district.

g. The field executive then forwards the sheets and summaries to the sales manager in the main office, who reviews them both in detail and in totals. He makes such changes as are advisable in the light of the totals shown for districts or for lines of commodities.

h. The proposed sales quotas are reviewed successively by the heads of departments in the main office or in conference. After final agreement is reached among them, the quotas are reviewed by the general manager, who compares them with long-time trends, last year's attainments, last year's quotas, and the tentative production schedules, budgets for expense and capital expenditures covering the same period of time as the sales quotas.

i. Individual quota records are then prepared in the main office for each sales unit and summaries are prepared for each district. The record forms used for sales quotas should be convenient for handling. Spaces should be provided for the field forces to enter actual sales opposite the quotas. The importance of the quotas can be brought out by the arrangement of the quota record.

j. Sales quotas may be issued in conjunction with other kinds of quotas covering expense budgets, merchandise stock quotas, or proposed gross profit or net profit.

3. Factors Considered in Determining Sales Quotas. All of the factors that should be taken into account in determining sales quotas may be grouped under four main heads, as pertaining fundamentally to:

Sales promotion and merchandising.

Production.

Finance and expense.

Organization and personnel.

The individual elements within each of these groups of factors are numerous. In some kinds of quota setting, not all of them need to be considered. But usually danger lies in basing sales quotas on too scanty a review of factors. If they rest on only one premise, such as the continuance of a fixed rate of gross sales increase, quotas may run afoul of certain factors which should have been foreseen, such as the amount of available working capital, expense control, balanced sales of different commodities, increased competition, training of the sales organization, and many others.

These factors are outlined in Fig. 2, grouped both according to functional classification and also according to position of the persons weighing them, whether in the main office or in the field.

Sales Promotion and Merchandising. The Desired Volume. The sales program for the period of time covered by the sales quota may emphasize

quantity (volume of business) to be secured, or *quality* (the sort of business) to be attained; or it may require a balance between quantity and quality. If the aim is for volume, care should be exercised in setting a total sales quota which is reasonable.

It has been found that quotas set at abnormally high figures easily may cause harm by arousing unfavorable attitudes on the part of the sales force. When actual achievement falls far below sales quotas, disappointment and loss of morale may follow; when quotas are exceeded, the resulting pleasure and pride in achievement strengthens morale.

<i>In the central office</i>	<i>In the sales unit</i>
1. Sales promotion and merchandising	
Desired total volume of sales	Local analysis of:
Desired quality of sales	Facilities and equipment
Allocation to territorial units	Customer attitudes
Plans for territorial coverage	Competitive conditions
Allocation to commodity lines	General business conditions
Allocation on time basis	
2. Production	
Production capacity	Service, especially deliveries
Desired production	
Time schedule for production	
Turnover of warehoused stocks	
3. Finance and expense control	
Capital requirements to attain sales quotas	Relation to expense
Relation to cash budget	
Relation to standard return on investment	
Relation to expense	
4. Organization and personnel	
Program for recruiting and training field men	Development of personnel engaged in selling by use of individual and group methods
District classification and lines of authority	
Promotions, transfers, and demotions	
Morale	

FIG. 2.—Factors considered in determining sales quotas.

An indication of good quota setting usually appears when in approximately half of the cases, the quotas are exceeded by the field units, and in the other half of the cases are not reached. Under normal conditions, this indicates that the tasks were reasonable, and a sense of fairness attaches to the quota system.

General business conditions, and the general status of the line of business engaged in, require careful appraisal at every stage of setting the sales quota. Forecasting of business trends may require extensive research.

A merchandising consideration with much bearing on sales volume is the changing or maintenance of prices. It may often be assumed that the greatest percentage increases in sales should occur where the greatest reductions in price are made; but there are many reasons why this does not always follow. The proposed volume of sales should be estimated on the basis of prices consistent with the trend in each commodity.

The Desired Quality of Business. The pursuit of volume without reference to many other considerations equally or more important for a satisfactory net profit is a crude method of operation. Sales quotas in most lines of business may be established on a basis which requires quality as well as quantity of sales.

Some of the ways in which such a balanced job can be assigned to the sales force are listed here. Not all of these, of course, are feasible in a particular business, nor should too many of them be introduced at one time into the sales quotas.

Quality requirements appearing in the sales quotas might consist of:

a. A definite proportion of total sales to be secured on high-profit commodities; or a specified *average percentage of profit* on sales for the period may be required.

b. A certain amount, or proportion, of sales to be derived from *new accounts*, or new customers.

c. A standard amount, or proportion, of total sales to come from *old accounts*, representing persistency of regular customers.

d. A proper *assortment of lines* or items to be shown in total sales; each item assigned a standard percentage to total.

e. A specified *average sales transaction*, indicating the size of individual sales.

f. The *number of items included per sale*, showing the thoroughness of the canvass made of each customer.

g. A standard "*service*" to be rendered in connection with each sale or for each customer.

h. A *quota expense percentage* to accompany the sales quota. (A discussion of expenses in relation to sales quotas appears in another section below.)

If the quality of the sales to be attained requires more emphasis than is given by including quality standards in the sales quotas, a powerful incentive toward that end may be introduced by basing the compensation system partly on quality standards. Commissions may be paid on a sliding scale based on quality of business or on net profits; bonuses may be awarded for attaining these features of the sales quotas; deductions may be made from scheduled pay if these standards are not attained.

Assigning Sales Quotas to Territorial Units. Study of territorial sales possibilities is a subject sufficiently complex to justify comprehensive research on the part of any selling organization. The ideal analysis of territories would reveal the potential sales for a given period of time so accurately that actual sales in each territory for that period, taken as a percentage of potential sales, would furnish an index of efficiency of selling in each territory.

Potential sales of an area are controlled by two considerations: (a) desire or demand for the commodity on the part of potential customers, and (b)

purchasing power to buy it. The first of these involves consumer psychology, with specific reference to the commodity. The second involves consumer economic strength. Both of these will fluctuate with time.

There are considerable data available showing the relative economic strength of the parts of the United States. Government sources include such publications as the Census of Population, of Manufactures, and of Agriculture; the new Census of Distribution; Federal Reserve bulletins; business surveys prepared by the Department of Commerce, and others.

Trade associations publish statistics reflecting territorial output of products, consumption, and sales. Newspapers, magazines, advertising agencies, and marketing concerns contribute many kinds of economic data. Sources of market information are listed in a publication of the Department of Commerce, called "Market Research Agencies." Some of the available series of economic facts provide them not only by cities and states, but by counties.

Territorial data therefore are at hand concerning population variously analyzed, for agriculture, mining, manufacturing output, retail outlets, income tax returns, cost of living, telephones, automobiles, wired houses, magazine circulation, life insurance, bank deposits, and many other measures of economic life.

The country changes and grows rapidly, so that the published statistics after a few years become obsolete. For many of these series of data, percentages of increase or decrease from time to time may be figured. Sometimes the rate of growth or decline in these measures of economic life are of great significance, especially for a business, which, after entering a community, requires several years to establish itself on a profitable basis.

Parallel Data within the Company. For the territories which the company has in the past covered with its selling organization, there are actual sales records available, usually in considerable detail. The relative value of sales facts from within the company, as against economic statistics from outside sources, for distributing sales quotas to territories, should be determined in the light of several considerations.

Company sales records are relatively more valuable for market analysis than outside data if the company sells staple commodities, has marketed them for many years, has cultivated the sales territories consistently for years, has adhered to certain sales promotion methods for years, and in short, has found its place in the field.

Outside data from the market are relatively more valuable if the foregoing considerations do not hold; if the company sells style or novelty or specialty items, is invading new fields, using new sales promotion methods, and seeks a new status.

Selecting Pertinent Factors. The problem in territorial analysis is one of determining which economic facts and which local psychological factors will provide the best measure of potential sales of a commodity. One or more of several methods may be used for sifting out those factors which are most pertinent. Four of these may be stated and evaluated.

First, the method followed may be to use those factors which furnish *broad, fundamental information* about each territory, such as population or a large part of the population (race, sex, literacy, etc.), value added by manu-

facturing, or facts relative to wealth and income. Reliance upon a few general facts for judging the value of territories, while sometimes crude, has the advantage of simplicity and may furnish as exact a measure as is justified by the practical uses. Such data are available for small units of territory. Another advantage is that economic data which may be more specific for the products to be sold, tend to correlate highly with population and other broad data.

The 1930 Census of Population and the new Census of Distribution provide fresh general information about territorial purchasing power.

Second, the factors to be used may be selected on the basis of specific *customer analysis*, logically deducing from the prevailing type of customer those economic factors which describe him. The typical customer may be described in terms of occupational groups, income groups, educational groups, etc., and statistics selected which measure the number and purchasing power of those groups. This method of selecting pertinent factors has much value. Its weakness lies in its tendency toward arbitrary assumptions, based on generalizing from premises which may not give a comprehensive description of customers. This method also is likely to ignore the variations existing in the prevailing types of customer, from place to place.

Third, those economic data may be utilized for territorial analysis which indicate the *total sales and business of the trade* to which the company belongs. In many cases, trade associations compile sales facts revealing the relative value of territories for the trade.

A useful principle, when such data are available, is to find what percentage of all companies' combined business is done by the one company, in each territory; then to project the trend of the combined business and compute the quotas as the same percentage of the future total as actual sales have been in the past. If the company's percentage of the total business has been increasing or decreasing in any section, this trend may be taken into account in determining the company's share of future business.

If, for example, the company's Kansas agency has in the past year secured 8 per cent of the total business of all companies competing for the Kansas business, it is generally reasonable to set as the sales quota for this year, at least 8 per cent of the anticipated volume of all companies in that territory.

This basis for quota setting is useful more as a supplementary basis than as the fundamental guide. Usually such trade statistics are not available until much of the year has elapsed, and by the following year new changes in the trade may appear. The dropping out or addition of competitors may change the percentage of total business for the company. This basis of planning sales has the further disadvantage of fixing attention more on what all the competitors are doing than on what are the inherent merits of each territory and all territories.

Fourth, the statistical method known as *correlation may be employed* to discover the tendency of sales to run parallel with any economic series. If a perfect correlation is found to exist—if the highest territory in sales is by the same relative amount highest in the economic factor, and the second highest in sales is second highest in the economic factor, etc., down to the lowest in sales corresponding with the lowest in the economic factor—the

correlation is $+1$. If no relationship is found to exist, the correlation is 0. If the highest in sales is the lowest in the economic factor, and so on for every territory, the correlation is -1 . Actual correlation coefficients may be at any point between the extremes. By means of multiple and partial correlation, the various factors found to correlate with sales may be assigned weights, so that their combined index will have the highest correspondence with sales.

This method has in the past ten years been tried out by market statisticians for different types of companies—life insurance, chain stores, meat packing, and others. It would probably prove useful in companies, the sales data of which lend themselves to this method.

Some of its weaknesses may be illustrated with the experience of a life insurance company which in 1920 used the correlation method for determining sales quotas of all their agencies for the following year. The relationships discovered existed for 1918 and 1919, but abrupt changes in economic trends in 1920 and 1921 overturned them.

Relationships between sales and other data measured in terms of correlation coefficients may be applied to the future by assuming that these external forces will continue to maintain their positions relative to the company's sales and that the future sales efforts of the company will be exerted in the same way. As a matter of fact, both the external and internal factors are like streams flowing in somewhat different directions, with different volumes and rates of flow, sometimes abruptly changing, so that the exact relationships discovered may not continue to exist.

There are so many uncontrolled variables when correlations of business data are figured, that the coefficients usually have been found to be low, and the "probable error" is high. This has been found the case in chain store data. When the territorial units used in the correlations are states or territories of any considerable area, the number of cases tabulated is so small that it indicates a high probable error.

The assumptions underlying the use of correlation methods for sales quotas under many conditions may be questioned. As a practical tool, this statistical method would measure sales relationships in terms of millimeters while practical working forces playing upon the situation would call for measurements in meters. Correlation methods may be useful for research in sales problems rather than for current quota operations.

Promotional Factors Locally Considered. Economic statistics and past sales records may furnish the skeleton for sales quotas, but if they are ever to take on the forms of life they must be filled in with the flesh and blood of local conditions locally appreciated. Some of these elements of considerable importance are qualitative, and cannot be statistically expressed. Some of them are psychological and exist in the habit structures of people in the community.

Other local considerations for many lines of business, have to do with the location of the sales unit on the street or in the city, and the building and equipment to be used for sales or sales offices. The amount of space available for selling purposes, its shape, use of basements or upper floors, positions of doors and stairways, amount and character of window-display space, and many other physical elements affecting potential sales may vary

widely from one sales unit to another. The effect of these elements on sales may best be determined by those who work daily with them. The greater the company's standardization of plant and equipment for sales offices, the less consideration will of course be given to these elements. In some lines of business such as retail stores, the physical environment is a very important factor. It plays upon attitudes and habits of both the selling employee and the customer.

Sales Surveys for New Territories. When the question of entering new territory or opening new sales units arises, sales estimates for those places are of great importance, because they may be the basis for a considerable investment by the company. Companies which are continually opening new units, as chain stores, have a thoroughly worked out technique for judging sales potentialities of new locations, which may be referred to here in rough outline.

Before visiting the location, facts are assembled regarding the community, such as trading area population, annual rate of increase of population, industrial payroll, number employed (men and women), average wage, chief industries, etc. On each point, a comparable old sales unit is found and sales by these old units are noted. In some cases, averages based on the company's old units may be applied to new communities.

The survey made locally includes counts of traffic at various points; analysis of traffic according to sex, age, occupation, class, race, etc., counts of salespeople in competing companies' sales units; counts of customers in those units; estimates of space devoted by competitors to various lines of merchandise; local buying habits; trends in local business conditions. Many of the data secured are compared with company averages for units in comparable territories.

Plans for Territorial Coverage. Many companies tend to open sales units in every state or in every part of the country that they possibly can cover. This expresses the desire for "national distribution." But when the costs of doing business are allocated on a territorial basis, it is often found that business secured in the more widely scattered or sparsely peopled sections of the company's territory is secured at exorbitant costs. There may follow a policy of selective selling, that is, concentrating the sales campaign in those territories which have the greatest number of prospects or the best prospects.

In setting sales quotas for commodities or services which have wide public consumption, the concentration of population in the United States in certain centers suggests concentration in territories to be covered. In the case of products which are sold to industries, for use in industry rather than by the consuming public, the concentration of the market is even more pronounced.

Of the 3,073 counties in the United States, there are 8 counties which consume one-fourth of the total products sold to industries. One-half of such industrial products are sold in 37 counties; and three-fourths of the total industrial products are sold in 143 counties. Such data easily lead to the conclusion that sales efforts should be concentrated in those areas. However, if many companies competing for sales of an industrial product pursue the same policy of territorial concentration, such factors as intense competitive bidding will enter into the question.

Analysis of sales accounts in relation to expense sometimes shows that accounts amounting to less than a certain minimum are secured at a loss. A lower limit may then be set for accepting business. However, it must be recognized that many large accounts have originated in small accounts and that the discarding of these may cut off a source of future large accounts.

Sales Quotas by Commodity Lines. The grouping of sales quotas according to territories of the sales organization tends to emphasize the *regional* aspects and to minimize the *commodity* aspects of sales quotas. From the merchandising standpoint, commodity sales quotas cutting across territorial lines and showing the goal to be reached by each commodity or line for the entire number of sales units, are very important.

The work sheets for estimating sales quotas should furnish sales data by commodity lines to serve as guides in setting down the proposed sales by lines for the sales unit. Commodity sales estimates should be totaled by districts and for the total company, and should be compared with the previous year's actual sales and quotas similarly segregated by commodity.

The trend of sales of each commodity month by month and year by year gives many clues to weaknesses in merchandising which should be recognized when sales are to be planned. The trend of each commodity's sales may be shown as a percentage to total sales of all commodities; and each of these percentages may be applied to the total sales quota to estimate the commodity sales quotas.

The sales trends of different commodities sold by the company are often very divergent, and these differences deserve consideration in quota setting. Some commodities are following an upward secular trend in sales, others stationary or downward. Some are influenced more radically than others by the cyclical forces of inflation or depression. The price trends vary among them. Style elements affect some more than others. Questions of sizes, colors, styles or patterns affect sales of some of them and others not at all. The seasonal ebb and flow of sales for one commodity will differ from those of another. Customer prejudices or likes will be directed at individual commodities, and such customer reactions toward a commodity will vary with the territory.

Sales quotas arranged by commodity lines make it possible during the period to:

- a. Exert sales pressure behind certain commodities in the total range of field units or in certain regions.
- b. Maintain sales balance between high-profit and low-profit lines so that total gross profit will be controlled.
- c. Set standards of sales by commodities; against which each sales unit can analyze the strength and weakness of its sales presentation.

Time Divisions of Sales Quotas. Under sales promotion and merchandising may be considered the time units for which the sales quotas will be subdivided—whether quarters, months, weeks, or days. The time element, of course, is involved for all factors; but since it has much importance for the sales promotion and merchandising program, it may be referred to at this point.

Sales quotas should usually be set for that total period of time which is a natural unit in operation—for example, a season—and also subdivided among the units of time most significant for sales stimulation, or for the manipulation of stocks or the demands of the customer. Monthly quotas are frequently the smallest units of time considered; but cumulative period sales quotas are also computed for the end of each month. In dividing the total period's sales volume among time units it is advisable to take into account especially:

- a. The natural seasonal fluctuations in volume.
- b. The merchandising or promotional ideas to be featured at the various times.

The seasonal fluctuations of sales may be computed either from the company's past records or from trade statistics representing all companies. The latter may be more desirable for use in quota setting because the company's past method of merchandising (or promoting sales) during a given month or other unit of time may be weaker than its method for another month; the combined figure for many companies selling the same commodities may give a more reliable seasonal index than the individual company's records.

The Gregorian calendar shows its disadvantages clearly when sales quotas are subdivided to meet its arbitrary divisions into months. A logical calendar, such as the thirteen-month calendar used by many companies, has many advantages for quota setting.

The remaining factors to be considered in setting sales quotas have been grouped under production, finance and expense, and organization and personnel. These are sometimes taken into account only for reviewing and checking the sales quotas before final approval of them. A sounder viewpoint, in many cases, is to employ these factors during all stages in developing sales quotas. Sometimes one of these will be of paramount importance, and will indicate the amount of needed sales.

Production Factors. Marketing companies frequently have no investment in factories or production agencies. For such companies, warehousing and delivery service from manufacturing sources of supply are the chief production factors considered. The sales quotas assigned to different commodities or lines should be checked against these two elements on the production side.

For companies engaged in production as well as distribution, there are at least four important considerations linking sales quotas with production: production capacity, desired volume of production, time schedules for production preceding and during the quota period, and the turnover rate of warehoused stocks if quota sales are attained.

Some companies enjoy the advantage of being able to utilize factory or shop or machine for more than one commodity, at will. Sometimes plant capacity may be changed without much variation in overhead, to fit wide variations in sales. In many cases these advantages are not enjoyed, and the management must reconcile conflicting ideas regarding the advisable sales quotas.

If the capital investment in plant and equipment is rigidly set, it may be necessary to modify the plans for sales and create additional sales plans so as to employ properly the plant facilities and to insure the proper gross income necessary for expense requirements.

The time schedules for production should be correlated with the time distribution of sales quotas. Turnover of warehoused stocks should meet standards which in most cases will be set by the comptroller. Each of these production factors should be considered in setting the sales quotas for individual commodities or lines.

Financial and Expense Factors. The financial and expense factors involved in setting sales quotas are especially:

- a. The amount of capital to be invested in order to attain quota sales.
- b. The effect of quota sales on the cash budget of the company.
- c. The control of investment to secure adequate return on invested capital, in relation to the sales program.
- d. The control of expenses, usually by setting expense budgets which will be concurrent with sales quotas.

The relation of sales attainments to capital requirements and cash budgets during the operating period is so direct and important that in many companies "financial quotas" are set on the basis of sales quotas estimated independently of the sales quotas used in the field. Such duplicate sales estimates are especially used when the regular sales quotas are set somewhat high for stimulation purposes. The financial quotas for sales are conservative so as to introduce a margin of safety in financial operations.

When these separate sales estimates are found advisable, they are usually limited in circulation to the financial heads and general executives of the company. If generally distributed, these estimates might cause confusion or might result in weakening the effectiveness of sales quotas used in the field.

Sales quotas for certain commodities or lines may involve individual financial estimates. This may be illustrated with the case of a manufacturer planning to introduce an entirely new product to his customers or an old product to a new group of customers. Cost methods may be used to determine the amount of money that will be expended and lost on each dozen of the new product sold during the introductory period. The total sales quota for the product then might be based on the total amount of capital which the company can afford to spend in a given period for the purpose of introducing the new item. If the sales promotion department finds that a certain number of thousand dozens should be sold in a given period properly to introduce the item, some agreement must be reached with the financial department for providing the capital required.

Control of Investment in Relation to Sales. The relation of sales to the invested capital may vary in so many complex ways that it is not feasible here to analyze these relationships. Under typical conditions, there should be consistent effort to secure higher turnover of each and all of the forms of company investment, in sales. Turnover should be indicated for merchandise, buildings, fixtures, equipment and other assets. The profit margin on sales and the turnover of investment in sales should be so tied together that a satisfactory return on capital will be secured.

If sales are not budgeted in proportion to existing investment or if capital expenditures are not properly controlled, the turnover of total investment is low. Assuming that two companies are equal in other things, the company

with the higher turnover of its total investment into sales will be in a position to offer better values to customers and yet secure a satisfactory return on the investment than a company with a low turnover of invested capital in sales, because in the former company a low margin of net profit on sales is compensated for by turning over the invested capital more frequently.

Expenses in Relation to Sales. Sales quotas often are set by promotional executives and field men whose temperament inclines them toward free expenditure of money. The desire of executives for a huge volume may obscure the intimate relationship which generally exists between sales quotas and expenses. It, therefore, is important that the comptroller and other executives, versed in expense studies, scrutinize the proposed sales quotas.

In many companies, operating expenses in the field are budgeted on the basis of proposed sales volume, possibly as percentages to sales. If sales quotas are set high, they automatically inflate the expense budgets. When actual sales fall below the quotas, expenses mount unreasonably high. If sales quotas are to be used in connection with setting expense standards, accuracy in sales quotas is very important.

In many cases the solution of this difficulty lies in setting expense standards in dollars on the basis of other considerations rather than as percentages of sales. Then optimistic sales quotas or temporary spurts in sales volume due to seasonal or other conditions will not throw expenses out of line.

The advertising budget usually is closely tied up with sales quotas. The pay-roll budget may be based partly on volume and partly on other operating results. Some companies have for their field forces a compensation plan involving sales quotas in such a way that the rate of commission may vary with the expenses incurred in getting those sales or may vary with the profit made on sales.

The study of sales quotas from the expense angle may result in establishing profit quotas to accompany sales quotas. Analyzing past records of the cost of selling by lines or units may lead to such steps as the adoption of lower limits for the size of an order, below which the customer pays delivery charges or forfeits certain services.

Organization and Personnel Factors. In this group of factors bearing on sales quotas may be considered especially four:

- a. The program for recruiting and training salesmen or unit managers.
- b. Reorganization of the field forces on the basis of new territorial groupings or new lines of authority.
- c. Personnel changes—promotions, demotions, and transfers.
- d. Morale of the sales force.

The subtotals and totals of sales quotas should be so computed as to agree with the grouping of individuals in the organization. Responsibility for attaining sales quotas may then be fixed upon individuals in accordance with their positions.

The program for recruiting and training men for field work is involved in the schedule of sales quotas. Usually there exist reasonable limits for sales to be required of one salesman or a sales group, and the need for men can be gauged by the desired volume of sales. A training program may be mapped out to go hand in hand with the sales program. This work may largely be

delegated to the field unit managers or district executives in conjunction with the personnel department.

4. Modification of Sales Quotas during the Period. For each time unit, whether week, month, or quarter, for which a sales quota has been set, actual sales should be compared with quotas as promptly as possible thereafter. Reports should be sent or given to each person responsible for setting or attaining a sales quota, indicating how closely actual performance has corresponded with quota sales.

Operations may show wide differences between the sales quotas and actual sales, covering a considerable length of time. When such differences exist throughout the field the bases on which the quotas were set should be critically examined. If the differences point to very complex causes, it may be found advisable to shorten or lengthen the total period over which the sales quota is to be set. Merchandising companies usually set sales quotas semi-annually to coincide with the spring and fall seasons, with monthly (and sometimes weekly) subdivisions of the total period quotas.

If the sales quota carries with it a proportionate investment in merchandise, equipment or various expenditures, it may be advisable to adjust the sales quotas from time to time during the period of operation. If this is not done, a wide discrepancy between quota sales and actual sales may during the period progressively throw the purchases or expenditures out of line with actual business.

Some of the methods in use for adjusting sales quotas during a period, so that thereafter they will conform more closely to the actual trend of sales, are as follows:

a. At the end of each month, compute the percentage by which actual sales vary from the sales quota, and adjust the next month's quota upward or downward by that percentage. A weakness in this method is that it may cause unnecessary changes in quotas by projecting temporary influences into the future. It assumes that the latest actual performance during a limited time is worthy of serving as a revised standard for future performance. The company may seem to be "backing down" on its original sales objective, and this impression weakens the standing of the quotas.

b. Another method is to allow the local sales executive on the first of each month to revise his quota for the coming month in accordance with his own judgment, based on recent operations. A difficulty with this method is that it offers too much elasticity in the field for departing from original plans for sales.

The procedure to be employed in setting and following up sales quotas may seem, after this description, to be very complicated. But if the responsible executives will attack the problem step by step they will find that the procedure is fundamentally simple and provides a clear-cut aid to management.

CHAPTER VII

THE SALES FORCE

SELECTING SALESMEN

By JOHN A. STEVENSON, *Vice President, The Penn Mutual Life Insurance Company*

Where can I get the best salesmen? What qualifications should they have? What is the best method of judging those who will make good? These are the questions which confront every manager who is building or expanding his sales force but satisfactory answers to these questions are not easy to find in the sales literature available today.

"For prompt action," writes one successful sales manager, "we find the newspapers our best means of getting in touch with good salesmen," while the next article we pick up remarks that "the poorest method of securing new agents is through advertising." One company's experience tends to show that "college graduates must have been out of school long enough to have acquired some practical experience, and the maturity necessary to command the respect of customers and prospects" while the slogan of another large sales organization is "Hire 'em green and train 'em yourself." We study through the elaborate tests which one company uses in trying to select successful salesmen only to find that another company finds no correlation between the facts brought out in these tests and actual sales ability.

No Specific Rules of Procedure. A survey of the processes and methods of selection used by successful sales organizations, therefore, inevitably leads to these conclusions:

1. There is no "best" source of prospective salesmen.
2. We have not discovered the particular qualities or combination of qualities which will guarantee sales success.
3. No scientific standard has been discovered which satisfactorily measures sales ability.

While no specific outline of procedure may be handed to the novice in sales management as the formula for building his branch of the business on a profitable basis, it does not follow that hit-or-miss methods can be depended on to establish a successful sales organization. Naturally, if enough salesmen are hired, by the law of average, a certain proportion will be able to sell. But under present business conditions, the sales manager, who depends on the law of average to give him the good producers he needs, must face the fact that the expense of turnover among new salesmen will run into rather big figures.

In the selection of salesmen, certain practices have been found to be profitable by certain sales managers who have built up successful sales organizations. These practices may not be profitable at all in other types of organizations or under other conditions, just as the general sales plan of one company may not be feasible for the marketing of a different type of product. While, therefore, we cannot draw up a set of rules to govern the selection process in the sales organization, there are certain fundamental principles on which proper selection is based, just as there are certain fundamental principles on which successful selling is based, even though actual methods of procedure may vary widely. Moreover, the sales manager who prefers to play his own "hunches" in the matter of selection—the prototype of the "born salesman" of yesteryear—is being fast superseded by the sales manager whose agency building is based on a knowledge of the practices which have been found to be satisfactory in selecting salesmen for a particular type of work.

Recruiting New Men. When a new salesman comes into a life insurance office, he is given some sales methods which experienced life insurance salesmen have found effective and then is told to experiment with various practices until he finds those which are most effective in his own case. This is about the procedure which the sales manager himself must follow in recruiting salesmen.

A survey made by one company showed for example that new salesmen were recruited from the following sources:

	Per Cent
Newspaper advertising.....	28
Personal contact of district manager.....	26
Salesmen already in the business.....	15
Supervisor.....	10
Dealers.....	10
Employees.....	7
Division office.....	3
Customers.....	1

One of these sources may be more profitable than another under certain conditions or in a certain territory but, at least, if obtaining salesmen presents anything of a problem, the sales manager in that particular business is scarcely doing a first-class job if he fails to experiment until he determines the possibilities of these various sources.

It goes without saying that the success of any method of obtaining salesmen depends on how that method is used. One advertisement may bring in salesmen and another may not, just because one advertisement is good and the other is poor. This was rather strikingly brought out by the fact that two agencies in a large company used exactly the same letter in circularizing professional men in their territories. One manager reported excellent results; the other no results. The only difference was that in one case the letters were carefully typed on high-grade paper and personally signed; in the other, they were multigraphed and a rubber-stamp signature used.

The Selection Process. Even if every chair outside the sales manager's office is occupied with prospective salesmen, the sales manager's job is by no means completed. He must at least try to select those who will make good.

So difficult is the problem of forecasting possible success among salesmen, that most sales managers consider that they have actually taken on a new producer only after he has passed the training and probationary period and has demonstrated his ability to sell.

No scientific method of selecting salesmen has thus far been developed which is worth the time it takes to read it. In most cases, the sales executive must rely on his own judgment, but there are certain definite helps on which he can depend for assistance in sizing up an applicant.

The personal history blank, in my opinion, serves much the same purpose as the company's financial statement when one is considering the purchase of stock. It gives certain information at a glance which it would be difficult to dig out for oneself. Frequent changes of employment or long gaps between the dates of positions held usually require explanation. But the personal history does not always tell the whole story and its chief value lies in the fact that it can be used to supplement the personal interview rather than as a substitute for the personal interview.

The same statement holds true in regard to personal references and reports from commercial agencies. A man quite naturally uses as references people who, he thinks, will write a favorable opinion of him and, in writing a reference of this kind, people have a tendency to whitewash the facts. On the other hand, when commercial agencies are employed to make reports, they are expected to show any unfavorable aspects in a man's life which might make it undesirable to employ him, and, therefore their reports often look pretty black. Information may be gotten from both personal references and commercial reports but they should be considered in their true light; that is, as supplementary records rather than as a final decree.

In the last analysis, the selection of salesmen is largely a matter of personal opinion. A good many organizations have several men give their judgment on a new man before they finally accept his application, but this practice represents merely the use of composite opinion in the selection of salesmen on the theory that "two heads are better than one."

Qualifications for Success. Needless to say, qualities like integrity, industry, ambition, perseverance, loyalty contribute toward success in the sales field as they would contribute toward success in any line of work. Questions such as the correlation between college education and sales success, or the value of previous experience are disputed, and, if research can help us solve the problem, it will probably have to provide a series of answers for different types of sales organizations.

Research has helped in various lines of work to give us a picture of the type of salesman who is most likely to succeed. The investigations of various life insurance companies agree, for instance, in showing that men between twenty-five and forty-five are more likely to succeed in life insurance selling than men who are under or over these ages. Similar investigations corroborate our common-sense ideas as to the correlation between physical characteristics and sales success; that is, they show more sales, on the average, made by a group of tall men than by men under average height; more sales, taking the group as whole, by men of average weight than men who are under or over the average. Other things being equal, then, the prospective life

insurance salesman who is neither very much overweight nor underweight is more likely to make a success, just as the prospective policyholder who is neither very much overweight nor underweight is more likely to live out his life expectancy. But just as the man who is the most perfect physical risk may be the first to die, the apparently perfect sales risk may be the flattest failure so that these standards are by no means an infallible guide in the individual case.

Naturally, considerable effort is required to find out whether, on the average, best results in a particular business are produced by experienced or inexperienced men, by men with a high-school education, or men with a college degree, by married or unmarried men, and to get similar information in regard to other factors of this kind which might enter into the question of sales success. However, a careful survey to determine the answers to these questions is decidedly worth while.

Interviewing. If the sales manager wants to build an agency force of men who are likely to make a success, he must accept the fact that the men he wants are not the lame ducks of other occupations, but men with opportunities to select other positions. A man of this type is going to weigh the opportunities presented by the work, but his decision will often depend on the interview, just as a prospect's decision on an order will often depend on the sales talk.

Like most interviewers, I usually begin by asking a man to tell me a little something about himself. The facts that he tells me I can usually get from the blank showing his personal history, but I get an inkling of his character from his choice of facts.

Then I go on to say: "Mr. Blank, of course you realize that this is a very important step you are going to take so we are going to take plenty of time to arrive at a sensible decision. Now I know you will understand my remark when I say that whether you decide on a connection with us is more or less incidental as far as the company as a whole is concerned—but it is by no means incidental as far as you are concerned. I want you, therefore, to weigh the matter carefully. If you do decide to come with us, all well and good, we'll do our best to help you succeed. On the other hand, if you don't, and I can help you decide on the type of work you would like to do, I will feel that I have made a friend for the company.

"When you are deciding on the kind of work you are going to undertake, there are certain questions to be answered just as there are certain questions to be answered when you are selecting an investment. Suppose you write down some that I think are very important (give him a piece of paper and a pencil) and then we can talk them over together.

1. Does the work really stand for something?
2. Is the field large enough to give me a real opportunity?
3. Is the future reasonably certain?
4. Will I enjoy doing the work?
5. Will I receive adequate compensation for the work?
6. Will I be trained for the work in the right way?
7. Is the company progressive, reliable, and sound?
8. Am I qualified to do the work?

"We have prepared a book which will give you the answers to the first seven of these questions but you will have to answer the eighth for yourself."

I then proceed to show him a book containing charts, tables, pictures, etc., which answer these questions. The book itself is an influential factor in creating an impression concerning the work and should, therefore, be attractive and handsomely printed if it is to create the right attitude toward the work which the man is considering.

While, naturally, every manager wants to present the work in a favorable light to men who, he thinks, will make good, he is making a mistake if he glosses over the difficulties inherent in the job. It is much better for a salesman to decide whether he likes the job before he takes it up than afterwards. Moreover, if he does take it up, and runs into difficulties about which he has been warned he is far less likely to be discouraged.

While no two interviews are exactly alike, I use a more or less standardized plan for this reason: it presents the clearest picture which I am able to draw of the work of life underwriting. If I do not follow a definite interview plan, I wonder after the interview is over whether I have painted the picture too lightly or too darkly. In other words, I feel that an interview plan to which I have given considerable thought enables me to meet my responsibility to prospective salesmen better than a conversation which may take any course.

Care in Selection. H. G. Kenagy stated not long ago that all the Life Insurance Sales Research Bureau knows about picking new agents can be summed up in two words: Be careful. That is all that any sales organization knows but, at least, we have come far enough along the road to realize that we can seldom pick up good salesmen "ready made" and, since the making process requires a good deal of time and effort, it will pay to exercise all the care possible in selecting our material.

BUILDING A SALES TRAINING PROGRAM

By W. W. CHARTERS, *Director Bureau of Educational Research, Ohio State University*

The fundamental principle of salesman training is that it should be based upon an analysis of the particular type of job that has to be performed. Every sales course is custom made; it is not ready-made. Every organization requires a specific course that fits it, and will not, without alteration, fit any other organization. The reason for this is that from this functional point of view the salesman in each company has to perform a set of duties different from those of any other company.

Job Analysis the First Step. We are all agreed, of course, that job analysis is necessary. But, while the principle is easy to accept and easy to understand, the methods of job analysis are more difficult. Yet sales research has been able with considerable concreteness to show how the analysis is carried on. What does job analysis mean? How shall we proceed to develop this analysis? What do we hope to get when we are through? This is a clear statement of the first task that confronts anyone who is trying to build up a training program.

Duty Analysis. There are two methods that have been used. The first method is to ask the questions: What do salesmen have to do? What are all the tasks that they have to perform? This has been worked out in a number of fields. For instance, in order to discover what the course of training for secretaries should be, a careful analysis of the tasks which secretaries perform was made. To do this two interviewers were employed for four months to interview 125 secretaries in two large cities. A list of 871 duties was compiled although not all of them are performed by each secretary. After this list had been secured it was checked by 715 carefully selected secretaries to see which of these duties they performed individually. From this a frequency list was made up showing that item 1 was performed 683 times, while item 871 was performed by only one secretary. When this was done, the basis for building up a course had been secured, because all that we have to do in a training program is to teach the secretaries how to perform each of these duties.

This straightforward analysis of duties took the time of two employees for four months but, before the study was completed we spent, in addition, the time of one person for a full year—this all at a total cost of \$4,500, not counting overhead.

Difficulty Analysis. The first method of making a job analysis is, then, to compile a list of all the duties. The second method, which applies more closely to salesmanship than the method just described, is that which is called a difficulty analysis. In other words, these questions are asked: What difficulties are the salesmen up against? Why do they not do better selling? Why are they not more efficient? In getting the answers to these questions the interview is used. Interviewers visit and observe people at work; they interview presidents, sales managers, branch managers, and the more experienced salespeople to find what difficulties they have seen learners meet, with the result that eventually a list of 50, 100, or 500 difficulties, as the case may be, is secured.

The difficulty analysis is usually a better method than the duty analysis for salesmanship training for two reasons: In the first place, salesmanship is so complicated that it is hard to state all the duties; and in the second place, it is much easier to state difficulties than to recall duties, for when certain duties are performed daily and become habitual, they are forgotten. The salesmen do not know that they perform them, but, on the other hand, they are much more conscious of their difficulties, and can recall them with considerable clearness.

In both a duty analysis and a difficulty analysis it is necessary to use the interview. Sometimes an observer is sent to watch salesmen at work as well as to ask them questions. For instance, in making an analysis of the difficulties of department store salesmanship, very little could be secured by questions. The salespeople and the managers were conscious only of the most general difficulties, but an observer at the end of six weeks, having spent two hours a day in watching salespeople, secured a list of 67. In the secretarial study just referred to, two interviewers spent four months interviewing secretaries. In making a duty analysis of homemakers one worker spent two years working up the returns after they were brought in. Ordinarily in mak-

ing a difficulty analysis, such as for salesmanship training, the list can be secured in six weeks.

Some salespeople have difficulties in personality. They have also certain routine difficulties: they do not fill out order blanks properly. They sometimes lack a knowledge of the product. There are additional difficulties connected with selling technique—the proper way to open a sale, getting information about the jobs that are coming, etc. Salesmen are confronted, they feel, very definitely with the problem of educating the merchants in the trade to become better salesmen.

It becomes the business of the training department to find the difficulties in all of these different fields, and to provide the salesmen with the information and instruction necessary to enable them to increase their effectiveness. So the department endeavors to secure a list of the different classes of difficulties, all of which need to be considered in any concerted attempt to build a training course for salespeople upon a solid foundation.

Collection of Best Methods of Handling Difficulties. When the first principle has been laid down, the second naturally emerges; that is to say, after we know what the duties and difficulties are, it is necessary to collect the best methods of handling these difficulties. The difficulties which have been worked out become the chapter headings of a manual or the topics of instruction in the early training course. The manual or the total course of instruction, if it is not put in a manual, consists of the difficulties as topics or chapters and the methods of handling these difficulties become the body of the chapters. It becomes easy to build a course of study by listing the topics and following out the second principle.

Where to Get the Material. In collecting the methods of handling the difficulties research again enters to furnish the technique. Where and how can the information be secured? The first source is the literature of the subject. When one begins to build up a course of study on the analysis basis, however, the amount of material which can be secured in printed form is extremely meagre. When a man puts his ideas into print, he expresses them in language that is much too general for this purpose. It is not specific.

A much better source from which to collect specific methods of handling difficulties is the group of expert salespeople within the organization itself. An illustration will make this clear. After the 67 difficulties of department store salespeople had been collected, 300 of the best salespeople were interviewed. They were asked how they kept their tempers with disagreeable customers, how they showed courtesy, how they displayed goods, how they closed a sale, how they dealt with mother and daughter when they were shopping together, or two friends, or husband and wife when they shopped together. These are some of the practical difficulties which salespeople have, and upon which the experts in the store have a great deal of specific information.

The 300 salespeople told us how they handled the difficulties. The result was "How to Sell at Retail" the richest body of specific methods of handling specific selling problems in the department store field that is to be found anywhere. And the significant fact is that this information came out of the experience of the expert people in that profession. These methods had never been collected in print, because nobody had ever taken the trouble

to interview the experts. All that was done was to organize this material and present it in readable form. It was really the contribution of the salesmen on the floor.

Getting Data from Expert Salesmen. This points the way to the method that should be used in every sales organization. An organization of 100 salespeople does not need to go outside its own ranks to find all the material that any young salesman needs in order to do his job successfully. A national organization will find one man in Omaha who has an excellent method about which he has never told anybody because nobody has asked him. There is another man in Birmingham who has some excellent methods, and still another in San Francisco who has fine methods of meeting difficulties about which the organization has no knowledge. These men have been given no opportunity to talk about their methods of meeting difficulties except at conventions, and at conventions few have an opportunity to talk.

By this method anywhere from six to ten different methods used by different men to handle each difficulty can be collected. When these are pooled and put together under one topic and then given to the new men in the field, it is possible to say to them, "Here is the way our expert people handle these difficulties. Try them out and see which of them will work for you."

This procedure is thoroughly logical, and has proved to be so excellent in practice that it is amazing that it is not more often used. It is one of those simple things which are so obvious that we let them go by. The principle is not new. It is used unsystematically whenever we get salesmen together, put up a problem to them and ask this one and that to tell what he does. The method should be used more systematically. Someone should be employed to collect the information through interviews, write it down, and put it into mimeographed or printed form.

It is seldom necessary to interview more than thirty people on any point. When 110 people had been interviewed on seven difficulties, forty-five ways of handling the seven had been secured, or an average of about seven suggestions to a difficulty. Of these forty-five all but two were secured out of the first thirty interviews. The others repeated the first thirty so that all that was secured from the additional eighty interviews was two points. Considering the expense of employing people to conduct interviews, these two additional points were not worth the time. One can be certain that with thirty interviews on each difficulty one gets about all there is to be said.

Methods of Handling Instruction about the Product. One of the weaknesses of salesmen is their lack of knowledge of the product. In collecting information about a product it is advisable to study it under four heads. For instance, the American Radiator Company asked the following questions regarding the Arcola boiler:

Uses: What are the uses of this boiler?

Construction: What is the construction of the boiler? How is it made?

Talking points: What are the talking points of the boiler, both in terms of what it can be used for and in terms of the competing boilers?

Objections: What objections do you have to meet in selling this boiler?

If one is not selling boilers but is selling life insurance policies, the same outline is needed. One asks, What are the uses of the policies? What

human needs do they satisfy? How are the policies constructed on the basis of actuarial and mortality tables and other factors? What are the talking points of these policies, and what are the objections that can be raised to them?

What holds for boilers and life insurance policies holds for anything that is sold.

Sometimes in a highly technical business, such as that of the American Radiator Company, it becomes necessary, not only to know the talking points of the product and the objections to it but in addition to know the facts and principles of heat engineering which will explain why the construction of the boiler is effective, why the talking points are good, or why the objections are correct or unsound.

When salesmen are given a course in the theory underlying the product by a technical man in the organization the course is likely to be too theoretical; but this difficulty can be met by a very simple procedure, as follows: If one works out the methods of construction of a product, its talking points, and objections, and asks the question *Why?* after each one, he is carried back to the theoretical principles. For instance, if a talking point of the Arcola Boiler is that it is economical in the use of fuel, and if one asks the question *Why?* he will get an answer in terms of certain facts and principles of heat engineering. And when this question has been asked in connection with every one of the points mentioned and for every product of the company—in connection with construction, talking points, and objections—we get a collection of heat engineering facts, which are all that the learner needs to know. Then when these are handed over to the heat engineering expert in the factory to give to the student, the training director can say, "This is what you are to teach the men." The result will be that the course of instruction in heat engineering will contain only practical points in the subject, if the expert will stick to his text. He is expected merely to work up this material into the best form for the salesman's comprehension, but he must not go outside it, and he must be certain to put it all in. The expert knows exactly what he has to teach, and moreover the student knows when he studies the theory that there are no useless facts included in the course. Everything included is of practical use.

Obviously, however, in a good many organizations it is unnecessary to teach much theory, because there is little that will be of use to the salesmen. In some cases salesmen's technique may be hurt by too much theory; but if this custom-made job-analysis basis is used, one can decide exactly how much theory salesmen can use.

To repeat, the first thing to do is to analyze the job, and the second thing is to collect all the methods of performing the different duties and difficulties under the job.

Organizing the Material in Form for Teaching. The third step is to organize the material in form for teaching. There are a large number of different methods. Teaching may be done through lectures, through books, through pamphlets, through schools and classes, through graphs, motion pictures, etc. These methods need no discussion because we know a great deal more about teaching than we know about job and difficulty analysis

and the collection of developing instrumental materials or about training on the job.

Problem of Developing Personality. As soon as teaching is begun, the first difficulty encountered is one which is not usually found in courses of study. This is the problem of developing personality. Personality is a great asset to salespeople. In general, success is equal to personality plus brains, although most of us are inclined to say that success is equal to two parts personality plus one part brains. Yet one of the most amazing things about all training in the art of salesmanship is that we have allowed the training in personality to become merely an incidental matter. It is sometimes handled by teachers and executives and sometimes it is not.

Many feel that salespeople should come to them with the right personalities. If they have them we are glad. If they do not have them, we merely "stew" about them. If they are very bad, we fire them. Not more than one executive out of five makes a more or less serious attempt to develop the personalities of his men. A good trainer, if he finds a man quite discouraged, tries to encourage him. If he discovers that a salesman is efficient, except that he is a bit grouchy and hard to get along with, he attempts to make him agreeable. If he finds that a man would make an excellent salesman provided he had greater personal force, he tries to tell him what to do to be more forceful. One out of five executives does make the attempt to do this sort of thing, but we should use a technique by which it is possible in a comprehensive way to develop a strong personality, particularly in those traits in which salesmen are weak.

Developing Each Salesman's Traits. Each salesman's traits can be divided into three classes: he has a number of qualities in which he is particularly strong, a group in which he is just average, and another group in which he is relatively weak. In getting a picture of how to develop this salesman, I should want to look at his strong points and build around those. Perhaps his great strength is his forcefulness of manner. In that case I should want to build everything around his forcefulness, and with this picture in mind I should concentrate most of my attention upon his weak traits.

The technique of developing personality is not so difficult, if one wants to do it and knows how. We cannot, to be sure, make a silk purse out of a sow's ear nor make a man who is spectacularly deficient in a trait superlatively efficient in that quality; but we do not find many people who are completely deficient in anything. It is certainly true that we can by training make a man stronger in a trait than if we leave him to himself. Traits have been worked out for life insurance salesmen, for secretaries, for educational directors in department stores, and we know rather well what are the traits which are conspicuously important in explaining the successes and failures of salespeople and others. Moreover, there have been collected informally a good many methods used by people in developing these traits, although few of these methods have as yet appeared in print.

Up to this point we have considered analysis, collecting material, its arrangement in teaching form, and the necessity for paying attention to the traits and qualities which the individual salesman needs. Much of this

material can be put over in classroom instruction, but stress should be laid upon another point that is absolutely essential in any training program.

Training on the Job. There comes a time when the project method—or what is more commonly known as training on the job, or field training—becomes an integral part of the training program. For instance, let us suppose that we have twenty men who are going to be life insurance salesmen. The first thing we do is to put them in classes for four weeks and teach them all that can be taught in class. After that has been done, they are by no means finished salesmen. They have to be trained on the job. They have to go out with other salesmen to see how a sale is made.

The first thing that training on the job includes is an analysis of the job by the teacher to see how he does it himself. The second step is to show the person how to do it. The third is to give him a chance to do it himself while the teacher is watching him; and the fourth is to correct his mistakes. Finally he is followed up from time to time, so that he may be instructed upon the fine points that were missed in the early training. These five steps—*analysis of the job* by the teacher, *demonstration* by the teacher, *trial* by the learner, *correction* by the teacher, and *follow-up* by the teacher—are necessary in any efficient training on the job. After a salesman has learned his material in class, then he goes out with a good salesman or coach who knows what he is going to do. The coach says, "Come along with me and watch me while I make a few sales." After the sales are over, the coach talks them over with the salesman and by this means the beginner learns some points. Then the coach says, "You take the next sale and I will watch." At this point the real education begins because the beginner learns more by one trial than he could by a dozen demonstrations without a trial. When the trial interview is over, the coach tells the learner where he has succeeded and where he has made his mistakes. Then he has him try another interview and another until he feels that he is reasonably well trained for making sales alone. After this the coach drops in on him from time to time as he sells, and has him come in to talk his difficulties over with him, until finally he has reached the point where it is not necessary to do this—if that point is ever reached.

Responsibility of Executives in Training. The final principle is that 85 per cent of the training given to salesmen rests squarely upon the shoulders of the executives in the line rather than upon the training department. The training department is very useful. It collects the material, arranges it, classifies it, and holds classes and conferences. All of this is entirely worth while, but, in the last analysis, it is the executive who is just above the salesman that must do the bulk of the training, if the training is to be done thoroughly and well. Therefore, one of the functions of the training department is that of training executives to train their subordinates. It is a very difficult job to get many executives to feel that they are responsible for the training of the men under them, and to get them to develop the technique of training. While there are a few executives who are born teachers, the majority of executives have not yet learned that their major function is to develop men rather than merely to attend to office duties and financial policies.

TRAINING THE SALES SUPERVISOR TO TRAIN

BY BYRON F. FIELD, *Superintendent Training Division, Commonwealth Edison Company*

What are the requisite characteristics of a good sales supervisor? Is it not true that in sales organizations most supervisors have been chosen because they have been especially successful as salespeople, or shrewd in making suggestions to the buyer, or of long experience in selling, or because they knew a great deal about the merchandise, or a combination of two or more of these factors? Is it not equally true that the average merchandise supervisor is concerned chiefly in increasing the quantity of his sales and, if he happens also to be a buyer, in getting goods which will sell well and make a handsome profit?

No salesman should be refused promotion to a supervisory position because he possessed these valuable characteristics; and every supervisor should be greatly concerned with the desire to increase sales and hence secure better profit.

Our problem is this: Is the salesman who possesses some or all the above qualities certain to become a good supervisor or, putting it more strongly, is he certain to become the best supervisor? The answers depend entirely on whether there are other important phases to the supervisor's job than those mentioned. The growing conception of the supervisor's function is that there are other decidedly important elements in his job, namely, his ability to work properly with and through his subordinates, his fellow supervisors, and his superiors.

We are all confronted with two situations. The first is: To what extent and in what way shall a salesman, who is being considered for a supervisory promotion, be tested as to his ability to handle people both through training and in day-by-day relationship? The second is: Assuming that we have a supervisory force deficient or unskilled in training salespeople, what method shall be employed to train the supervisors better to train their subordinates? This discussion will be concerned chiefly with the second problem. It should be said, however, that the work of training future supervisors to train would be very much lessened by a more serious consideration of ability to deal with and train other people, in deciding who is to be promoted in the first place.

The Commonwealth Edison Company maintains a number of electric shops and a force of house-to-house salesmen. Electric shops are maintained by the company in order to render the ultimate service possible by the introduction of such appliances to the public; to set a standard of quality to all electrical sales organizations in the community served and, of course, to create a greater demand for electricity—and to make some profit. One can see from this that the company must, quite naturally, be particularly sure that the sales remain sold, that the articles which are sold are useful to, and used by, the customer.

The General Training Program of the Company. Before going into the specific subject of training the supervisors to train, a few words about the general training program in the company might furnish a background. In this organization, as in any other, training of a sort has always been

carried on in every department. This has been largely informal. The methods employed, the duration of the period over which the training extended, and the success achieved, have depended largely on the initiative, ability, and personality of the individual or individuals in any department who conducted the training. Acting upon the supposition that no one individual possesses all the skills and traits necessary to make a good trainer, and that no one individual possesses all the knowledge which could profitably be imparted to the new employee, a training division has been installed in the industrial relations department.

The work of training may be conducted either on a centralized or decentralized basis. When the centralized plan is employed a large training staff of experts is built up in the central training office. Various members of this staff are assigned to conduct training for, and in, certain specified departments. This extradepartmental trainer theoretically brings into the department a high technical skill in the training necessary in that department. Under the decentralized plan the training office maintains a relatively small force, whose duty it is to draw out from the various departments in which a training program is undertaken the methods most useful in those departments. This company is committed to the second, the decentralized plan.

About 1926, at the instigation of the president of the company, three surveys were made. The first dealt with the attitude of the customers toward the company; the second, with the attitude of the employees toward the company and the public; the third measured the actual performance of the employees in dealing with the public from the public-relations angle. The results of the surveys showed that while the morale of the employees was very high and the desire to give good service was equally high, this desire was not sufficiently transformed into action. The customers were favorable to the company but not as warmly favorable as they naturally would be if the employees showed more actively their desire to give the best possible service. The evident problem was one of giving the necessary training which would bring out the best practices in dealing with customers.

The sales department was obviously one of the most important in which to carry on training. Before doing so, however, it was necessary to analyze those factors in an employee's performance which most affect the customer's attitude. A long scientific study had already been conducted on this subject, and a fairly definite agreement reached as to the relative weight of various factors. These were, in the order of their importance: *interest shown in the customer, quality and method of giving information to the customer, appropriateness of speech, politeness, and appropriateness of appearance.*

Conferences on Public Relations Factors. An employee of the company who had considerable experience as a teacher was given special training as a conference leader. This title is significant. He was then assigned to conduct conferences with the salespeople and supervisors in the electric shops on these important public-relations factors. He did not enter the electric shops department, however, as a teacher giving training on certain facts from a text; he entered rather as a questioner seeking opinions, information, and ideas about those factors from the people who were on the job day-by-day. Before any subject is discussed with the salesmen a similar meeting is carried on with

the supervisors on the same subject. This brought in the supervisors so that they felt the material was their material. Hence, when they carried on meetings they felt that they were discussing their own material.

When the subject of interest in the customer was taken up, the conference leader asked a large variety of questions to find out specifically what devices, acts, phrases, and attitudes had been found, by actual experience, to induce the most favorable customer reaction. The same or similar questions were asked of all the salespeople. The conference leader then put these answers together in writing in logical order. These agreed best practices were then turned back to the people for still further discussion and comment. When they had finally been approved by the salespeople, their supervisors, and their department head, they were set up as the standards of personal service of the electric shops. Incidentally, a similar program was installed in over a dozen departments.

Service Sampling. From the beginning it was felt that there should be some definite measuring stick to show to what extent the performance of the salespeople with the customer had been improved, as the result of the meetings and the standards of personal service which were developed in them. This measuring stick took the form of service sampling. Service sampling consists of sending make-believe customers into the department to carry on what to the salesperson is a normal customer transaction. The service sampler asks the same questions and reacts, to all appearances, in the same way as any other customer. At the conclusion of the make-believe transaction the service sampler, in private, prepares an analysis of the entire occurrence. In it the sampler rates the salesman numerically as to the degree of satisfaction produced by the various factors entering into the contact.

To be specific, the factor of interest in the customer is broken up into as many of the component items as possible. In rating the salesperson's performance the degree to which he has shown interest in the customer, based on this agreed standard, determines his rating on this factor. He is similarly rated on the way in which he presents his information, on his speech, his politeness, the appropriateness of his appearance. Of course, the identity of the sampler as a sampler must always be hidden, otherwise the value is lost.

In this company, because of the determination to distinguish between service samplers and so-called "spotters," employees making a low rating on a service sampler's report are not identified. The material written up about such interviews is used for general illustration rather than for individual discipline. Cases of "distinguished service" are identified, and the person and department notified.

Sampling has now been carried on over a period of four years and an improvement of over 35 per cent has been made in the electric shops. At first the sampling was confined to limited periods; later it was made continuous as a part of the activities of the public relations department.

Shop Meetings under Supervisors. While the original meetings on the subject of public relations, in the many departments where the highest percentage of customer-employee relations existed, were carried on by an outside staff man, the intention from the start was to turn over as much of the training as possible to the supervisors in the departments concerned after the original series of meetings had been concluded.

In line with this determination it was arranged to have monthly follow-up meetings on public relations matters conducted in the electric shops by the supervisors themselves. In the electric shops, as in other departments, the supervisors who were to carry on the follow-up meetings were called together for a discussion of objectives and methods to employ. After having been given an outline for discussion and lengthy instructions on methods the supervisors started in

The events which followed proved that no matter how well-meaning the supervisor may be he cannot carry on first-rate discussion meetings without a considerable amount of special training along that line. A supervisor who acts and reacts very rationally under normal circumstances frequently becomes nervous and confused in leading a discussion meeting. In more than one case the supervisor read sections of his outline, which were intended for himself alone, to the group. Another common tendency of the supervisor was and is to ask a question and, having received a one-sentence answer, close off all further discussion by answering the question himself at much length. This can be avoided only by considerable training and experience.

These incidents were valuable chiefly because they showed clearly two things. The first was that there must be much training of the supervisor before he starts training his subordinates. The second was that, for the first few meetings held, a staff-training representative should be present to enter into the discussions occasionally, if necessary, and make notes for discussion with the supervisor after the meeting.

It will be seen that this entire training enterprise was based on the original survey which indicated certain deficiencies. The survey was made, the outstanding deficiencies which might be corrected were analyzed, the meetings were held for the common discussion of the best methods of overcoming the difficulties. Before, during, and after the meetings surveys were carried on to determine just what improvement was resulting from the training.

For purposes of comparison it is fortunate that there was undertaken with the electric shops' salespeople another training procedure, quite different both in methods pursued and general set up. Partly as the result of the success of the public contract training program, the management of the electric shops asked to have general job training set up in the department. The first step to effect this was to send a staff investigator to the electric shops. While there, he was to make both activity—and difficulty—analyses. It was early determined that job training should include instruction on the proper use of the sales ticket, on the information necessary about the various articles on sale, and on the technique of salesmanship.

The staff representative conducted this study as a salesman on the job, as an interrogator both of salesmen and supervisors, and as an observer. In making the study he listed the difficulties confronted as nearly as possible in the order of their importance and frequency. In preparing material on merchandise information he not only secured the fundamentals furnished by the manufacturers' representatives, but also those other factors about which average customers are curious. In preparing the sales technique manual a group of people studied the mass of literature available and its application to the electric shops' situation. As a result of these studies three manuals

were prepared. One dealt with the sales ticket. The second, on merchandise information, devoted a chapter to each class of appliances sold. The third manual, on sales technique, considered all those factors with which it is felt the salesman should be familiar.

Training work, aside from the follow-up conferences on the specific public relations angle of the work, was divided into three general parts. The first is the vestibule school, in which new salespeople are trained briefly on the essentials with which they should be familiar immediately, while at the same time starting on their work as salesmen. The second is the general training conducted with all salespeople by supervisors. The third is training of the supervisors to train.

In the public relations training the conference leader entered the meetings with a skeleton outline which formed the basis of the discussion; in the job-training meetings the leader entered the group with a definite manual which contained the basic body of material to be studied.

The Electric Shops Training Supervisor. Before the manuals had been completed for use the question of who was to have general supervision of the training in the department had to be answered. To carry out the plan of decentralization it was determined to choose from among the supervisors within the sales department a competent individual who would carry the title of electric shops training supervisor. Much time and thought was given to his selection. He needed to be patient, to have a high degree of cooperativeness, ability to assimilate proper educational methods and disseminate these to the supervisors within the department who were to act as coaches under his instruction. He had to be an individual with enough background of sales and supervisory experience to give him and the other supervisors a fellow feeling in their common problems. At the same time he had to have a genuine enthusiasm for training. After a careful consideration of every supervisor in the department by the department head, and one or two others, a candidate was selected.

This sales training supervisor has a variety of duties. His desk is the clearing house for all sales training material. He personally conducts vestibule school meetings with new employees; largely trains the supervisors to train; and, by sitting in at their meetings, offers suggestions as to improvements in material and technique.

Obviously the immediate function of the company training division was to help the sales supervisor to become a specialized trainer. This was done by a long series of informal discussions, and by sitting in at meetings he conducted, which were later used as a basis for the discussions. There was daily personal contact with the developments in the electric shops, but the major part of the execution was left to the trainer there. The electric shops training supervisor has been discussed at such length because his is the key position in the program. Provided there is a sales force of any considerable size, a training supervisor, selected from the group, who stays on the sales payroll as staff advisor gives the best possible medium for carrying out the general training program in such a department.

Drawing on Employee Experience. During the time when the staff investigator was making his difficulty—and job—analyses in the electric

shops, and during the entire development of the training program, the supervisors were called upon for suggestions. When the manuals were completed they were felt to represent the approved ideas of these people themselves. The supervisors were then called together in a meeting and the future program carefully outlined to them. It was indicated that from then on they would be expected not only to conduct training meetings with their salespeople, but to take part in meetings for the improvement of their own technique in training.

The material upon which these supervisors are being trained as to the best methods of training their salespeople has been prepared by the company training office from a combination of experience, observation, and the best literature in the field. This material is being used by the electric shops training supervisor in his coaches' meetings. Incidentally the supervisors, in their capacity as trainers, are referred to as coaches. This training material goes in considerable detail into the methods which are most useful in holding meetings of employees. Practical demonstration meetings are held with supervisors before the final material is presented.

Department heads have been found frequently to require even more training on how to conduct discussion and training meetings of supervisors, than supervisors in their meetings with salespeople. They must be given the same kind of advisory assistance.

Regardless of his personality the department head or supervisor, with very few exceptions, will always dominate a group consisting of his subordinates. In a training meeting, however, the fundamental idea is to draw out information from the group members. In order to do that the group leader must learn how to subordinate his own desire for self-expression, and how to get the most general participation. This is not an easy task and cannot be accomplished until after a number of meetings have been held, in which the company training man observes the methods employed and offers suggestions for improvements after the meetings. So far it has been found that this method can be used successfully both in training department heads to hold discussion meetings of supervisors, and for supervisors in holding meetings with their subordinates.

Testing Results. Just as in public relations training some sort of measurement had to be set up, so in job training various devices for testing results were provided.

To test the performance on preparation of sales tickets a chart for the compilation of errors on sales tickets was prepared. On it were noted a variety of possible errors. When an error was discovered on a sales ticket a copy of that ticket was routed to a desk where the error was checked opposite the name of the person who made the mistake. This check obviously was direct. As soon as any individual had made more than the minimum number of mistakes he was called in for special additional training on sales tickets. Such a call, being partially disciplinary, quickly took on a high stimulative value.

The check on merchandise information is indirectly reflected in the per cent of articles returned by customers after purchase. Information given is also noted in the service samplers' reports.

The check on sales technique is reflected in the gross sales, and per cent of return sales columns in each individual's performance record. Absence

and tardiness, and any minor infraction of regulations, are also noted as indicating the frame of mind toward the job. Quarterly reports are prepared by each supervisor giving the rating of each of his subordinates. This proves a very good cross-check because a supervisor finds it rather embarrassing to insist to the electric shops trainer that a certain salesman should have considerable additional training when at the same time he is rating that salesperson as "superior." In addition to furnishing a check of their performance the various reports give a very definite stimulus to the interest which the salespeople take in the training meetings, and in putting the ideas developed there into practice. Many feel that this is the more important service given by the various checks and by the service sampling reports.

Monthly reports by the supervisors on the meetings which they have conducted, the subjects which have been discussed, and the salespeople who have attended, are sent to the electric shops training supervisor. He includes copies of these reports, together with a list of the meetings he has conducted, of the coaching he has given the supervisors as trainer, and of the general progress of training in the department, in his monthly report to his department head and to the training office of the company.

In addition to what must seem an extremely comprehensive training program there was also started at the earnest request of the head of the department, a series of supervisors' meetings conducted by the head of the department. These meetings, of course, are for the discussion of the various elements which go to make up the supervisors' responsibilities, duties, and functions in addition to those relating to training.

All of us are confronted with a very definite problem. We have supervisors who have been promoted to their positions because they were good salesmen; not because they were good trainers. We must now aid them in the best methods of transmitting the skill they developed to the people whom they supervise. It is certain that the time will come when the natural ability to train, to work with, and to help others, will play a more important part in selection for promotion. Until then we must be more than ever concerned with the methods to use in making quasi teachers out of salespeople. Even after the millennium is reached it will be recognized that training subordinates is a major function of supervision, and that the process, although greatly improved, must continue. We will always have with us the problem of the training of the trainer to train.

RATING SCALES FOR IMPROVING THE EFFICIENCY OF SALESMEN

By H. G. KENAGY, *Assistant Manager, Life Insurance Sales Research Bureau*

Rating scales, as we find them in the business field today, are the least scientific of the measuring instruments in use, and give little immediate promise of becoming comparable in objectivity or accuracy with other types of psychological measurement. At the same time they are the most widely used. Personnel workers, and even line executives, who do not attempt to use intelligence tests, for example, find no apparent obstacles to devising

rating scales for almost any purpose. Psychologists and statisticians who have attempted to devise rating scales for practical use have generally become thoroughly disgusted or discouraged over the possibility of developing reliable—i.e., scientific—instruments, but the business man has not been deterred by any lack of reliability; he has no scientific conscience or consciousness. Yet it is not exactly a case of fools rushing in where angels fear to tread. The fact seems to be that even the most unscientific rating-scale efforts have achieved worth-while results, and practical experimenters have not been willing to quit the field merely because they have no high positive co-efficients with objective criteria or other proof of reliability.

In other words, rating scales are highly popular instruments and are likely to be permanent additions to the personnel tool chest. Yet it need not be assumed that we must accept the present unscientific character of rating scales as final and inevitable. Most of the present troubles arise from the fact that rating scales are used by persons without scientific training in psychology or statistics. They do not think naturally in quantitative terms about human traits; they do not even agree with each other as to the definition of the most common traits. Rating results can be made increasingly reliable, but the process will necessarily involve a long period of educating the raters in the fundamentals of rating scale theory and technique. If the psychologists and statisticians will be patient, and lend a hand in this educational process, the next generation of executives may talk as intelligently of distribution curves, reliability coefficients, percentiles, etc., as any scientific worker could wish.

Granting the present unscientific character of rating scale practice, what value have such scales as can be used and how are the scales to be employed?

Rating scales have four, perhaps not distinct, but distinguishable uses:

1. To provide a better basis than is generally in use for judging the salesman's efficiency on the job.
2. To serve as a guide for systematic training and supervision on the job by field managers or supervisors.
3. To supply data on the training needs of the sales group, thus indicating the requisites of the training program.
4. To supply the individual salesman with a picture of his job in terms of its specific requirements, so as to enable him to follow intelligently a program of self-development.

A rating scale which is to be used for these purposes—and a single scale will serve all four—must necessarily be built upon a complete and detailed analysis of the salesman's job. We cannot, therefore, have a single rating scale universally applicable to all sales groups; we must have a different scale for each particular selling job. If within a single company there are two or more different types of sales work, then two or more scales must be prepared. Every rating program which is successful must be a direct outgrowth of the specific situation in which it is to be used; a scale borrowed from the outside, even from a single concern, will have little value no matter how successfully it may have been used elsewhere.

Measuring the Intangibles. The use of rating scales for *judging efficiency on the job*—which was our first purpose—is an admission of the fact that such

objective measures as we now have—volume of sales, per cent of quota obtained, distribution, cost to sell, etc.—are not sufficient to give us a finally reliable measure of the individual salesman's worth. Even when we have achieved the utopian dream of scientific quotas and reliable standards for fixing the salesman's tasks, there will still be a group of intangible factors, contributing indirectly and in the long run to the total results, which can only be evaluated by some sort of rating scale. Let us measure by quantitative methods all of the factors in sales efficiency which can profitably be so measured, taking into account sales possibilities and other conditioning elements; we shall still have many intangibles, even in the specialty salesman's job, which can be evaluated only by personal judgments.

Job analysis ordinarily develops three kinds of information about the salesman's task: (1) specific duties and responsibilities—the skills required, (2) knowledge or information needed, and (3) the personality traits necessary or desirable. Many elements under (1), and perhaps under (2), can be subjected to quantitative measures; the elements included under (3) must be left almost wholly to subjective estimates. If the salesman's task has been *carefully defined* in such terms as "required calls per day," "percentage of outstandings on collections," "number of demonstrations per week," "number of goodwill calls to be made," etc., in addition to the usual measures of sales results, and if the salesman's store of needed knowledge has been tested, most of the questions involving *what* and *how much* are answerable without a rating scale, but we still have the questions which begin with *how well*. We can use absolute figures in recording the number of calls made, the cost per unit to sell, the percentage of possible outlets sold; we must use relative terms in recording the salesman's ability to build goodwill, his reaction to supervision, the effectiveness of his demonstration methods, and similar items.

Perhaps it should be pointed out, in passing, that there are many elements of the sales job subject to measurement in quantitative terms on which, because of their relatively minor importance, actual records need not be kept. It is possible to record, for example, how many display signs a salesman places each day in the stores of his customers, provided that is a required task, but such a record might not be worth the cost. Besides, the locations in which the salesman placed those signs, and the manner in which he presented them to dealers, are facts of greater importance than the number he succeeded in disposing of. Therefore it is proper and wise to include such elements on the rating scale, asking both the questions *how much* and *how well*.

Use of Rating Scale as Guide in Training. In most sales organizations, the use of a rating scale to judge a salesman's efficiency and therefore to classify him for compensation purposes or promotional possibilities, is the primary and all-important use. Of much greater importance is the second use mentioned above; to serve as a guide for systematic training and supervision, on the job, by field managers or supervisors. For obvious reasons, which will be discussed later, the ratings on salesmen in one group are not strictly comparable with the ratings on salesmen in other groups unless the same manager has done all the rating, for our rating scales are not yet reliable measuring instruments. Therefore, the use of rating scales as accurate

measuring devices must be considered secondary in importance to other uses—at least until better scales can be employed.

Inaccuracies and the lack of comparability do not enter as deterring factors when we use rating scales to promote systematic training and supervision. Each salesman can be considered by himself and his development definitely planned, regardless of how his fellow salesmen are rated or whether he has been rated generally too high or too low. Our interest is in the rating on specific elements of his sales work, and no salesman is so perfect in every phase of his job that some need for training will not show up.

Assuming that the work of job analysis has been properly done and that the rating scale calls for judgments on how well the salesman performs specific elements of his task the rating record should indicate clearly to the supervisor the various weak spots in the salesman's working equipment. It is therefore the starting point in a program of systematic development of sales ability. Naturally we must have the necessary training material covering each element of the job, and we must have supervisors who have learned how to teach—but that is another story.

Training Needs of the Whole Sales Force. As a natural corollary or supplement to the use of a rating scale in training on the job, the scale will supply to the sales manager or his training department the data from which to discover the training needs of the sales force as a whole which require special attention. Suppose, for example, that the rating results secured by a food products concern uniformly show that their salesmen are rated low on: (1) knowledge of company history and policies; (2) ability to interest dealers and clerks in pushing its brands; (3) attention to slow-moving brands; (4) merchandising suggestions given to dealers; (5) adjustment of complaints and errors; (6) analysis of dealers' needs; (7) enthusiasm over the company's reputation and character, etc., the sales manager would know that his sales force needed training in methods of building goodwill and he could take steps to see that the most effective methods were collected and taught to his men. Again, if the rating records show lack of attention to new outlets, little progress in building distribution on special items, heavy casualties among old customers, weakness in handling the sales interview, etc., it would be clear that the remedy lies, in part at least, in developing certain personality traits in the salesmen—aggressiveness, tact, industry, earnestness, and self-confidence.

Rating Scale Used to Analyze the Job. The fourth purpose which rating scales can serve—that of supplying the individual salesman with a picture of his job in terms of its specific requirements, so as to enable him to follow intelligently a program of self-development—has seldom been recognized, though it is perhaps second in importance only to that of promoting systematic training.

It is often true, unfortunately, that the salesman has never been given a picture of his job except in the most general terms. He has not been given an analysis of his duties, nor shown the many elements which contribute directly and indirectly to his success. Quota, collections, sales talks, demonstrations—those things have been dinned into his ears day after day, but ability to plan his work, promptness and accuracy in making reports, respon-

siveness to sales suggestion, goodwill building, cooperation with other salesmen, tie-up with company advertising, and similar factors have not been presented in terms of the specific activities which go to make up the day's work and therefore ultimate success on the job.

Yet salesmen crave just this sort of information. They welcome the fact that they are being judged on a definite scale rather than on the usual indefinite basis of general worth. They like to feel that their work is analyzed point by point, and credits matched against criticisms, because otherwise a single outstanding weakness usually causes lack of consideration of many good points. But they want to know the basis of judgment. If they are kept in the dark, they are inclined to view the rating system with suspicion and distrust, they try to hide their mistakes and cover up their weaknesses with alibis.

Experience in firms which have offered the rating scale to their salesmen as the basis for a program of individual development has been altogether favorable. Some managers have had their salesmen rate themselves and then bring their ratings for comparison with the managerial judgments. Differences were discussed and the reasons for low ratings on particular points explained. Then the managers suggested steps to be taken to improve the ratings. The net result was better directed effort on the part of the salesmen and a stronger bond of confidence and goodwill between each salesman and his manager.

Every serious-minded salesman is ambitious to improve his position—in salary at least. The better he understands what is expected of him, the easier it is for him to measure up and the more interest he will show in self-development. The more specific we can be in setting standards of action and in defining his tasks, the greater the effort he will put forth in seeking to meet the requirements.

Intelligent Use of the Scale. I have tried to indicate that the value of a rating scale arises from its usefulness in securing better judgments of the efficiency of salesmen and in promoting the work of developing men. Both of these functions rest primarily upon the field executives and supervisors. It follows, therefore, that a rating scale is of little value unless it is used intelligently by these men, and unless it is tied up with a well-defined training program which has their interest and support. Educating raters and securing their active cooperation in the follow-up training program is an administrative task which presents some practical problems. With these problems we shall deal briefly:

How to get a rating scale used is the first problem which confronts the sales manager or his personnel department. The sales organization is far flung; the field managers or supervisors are running their own little organizations without much supervision, usually, and without much contact with other managers or general office departments. They are practical men, spending their time chiefly in handling matters of administrative detail. They have had no training in personnel management; they have given little thought to personnel problems except in the handling of specific cases. Finally, they are busy. When we start out to introduce a rating plan which these men are to use, these are the facts which we must keep in mind.

We know, therefore, that the rating plan must be simple, easy to understand and to use. The items on the scale must be couched in familiar terms—the terms they use, so far as possible. Furthermore, the scale must be short, or be so easily used that it takes little time. Field managers refuse to be bothered with anything which appears to take much time from pressing duties to do a job which, to them, is already being fairly well handled. Finally, the rating phrases or judgments must be in terms which the managers habitually employ, or so similar as to cause no conscious mental adjustments.

Fitting the Scale to the Situation. Most of these practical conditions are met by building the rating scale to fit the specific situation, using job analysis data to select the actual items for the scale. This insures that the managers will understand the terms used, and also gets away from the common tendency to rate on abstract qualities such as adaptability, leadership, convincingness, resourcefulness, etc. However, if a rating scale is inaugurated in advance of thorough-going job analysis, abstract terms such as these can be used with fairly comparable results if defined in terms of job activities. For example, a rating on "resourcefulness" can be made fairly useful by indicating the things which a resourceful salesman does, such as: discovers ways of overcoming new objections and difficulties; originates and tries out new selling ideas and merchandising plans; makes suggestions to others, etc. Leadership, similarly defined, would mean: takes the lead in conversations; dominates the groups of which he is a member; inspires other salesmen; promotes group cooperation.

To meet the requirements of brevity, some of the minor elements of the job may have to be omitted. It helps, also, to group or classify the items under general headings, thus giving the appearance of brevity. Actual judgments can be secured on a hundred specific factors if only a small number of final judgments are required.

Method of Recording Judgments. The task of determining what method is to be used in recording opinions, is at once a highly important and most difficult one. We must keep in mind the terms which field managers habitually employ in passing judgments and at the same time we must try to insure as much scientific usefulness as possible. We do not have to use the manager's somewhat crude and often ambiguous terminology, of course, but our terms must be capable of ready translation into his own thought media. Continuous educational work will gradually make it possible to introduce a more nearly ideal system, but in the beginning our job is that of refashioning the manager's common-sense methods into a fairly reliable scientific instrument—leaving all the common-sense ear marks sticking out conspicuously.

Our chief difficulty arises in connection with the method of recording judgments. Field managers ordinarily lack the capacity to think in quantitative terms about personal traits and they do not understand what is meant by a normal distribution. Furthermore, many managers lack wide experience with salesmen outside their own immediate groups with which they can compare their own subordinates. Standards of performance therefore vary widely from one district to another. When managers are asked to rate their salesmen using the time-honored phrases "superior," "above average," "average," "below average," and "poor," they will place less than ten per cent in the lowest two classifications, regardless of caution in the

instructions that a normal distribution calls for approximately thirty per cent in these groups. There will also be the usual result of some managers ratings uniformly low and others uniformly high. Of course these differences can be corrected by available statistical methods, but the problem of getting a wider distribution of ratings within a group needs attention at the source.

Professor Forrest A. Kingsbury of the University of Chicago, after evaluating experimentally the various types of rating methods—man-to-man comparisons, graphic scales, numerical judgments, and colorful adjectives—adopted the five degrees, mentioned above, in which terms managers habitually pass judgments on their subordinates, and secured a satisfactory distribution of ratings by using the following definitions, which are not only practical and comprehensible, but theoretically defensible:¹

The central rating of 3, or average, is defined as meaning that the employee "meets reasonably satisfactorily the recognized departmental standards in respect to this trait." Every manager knows exactly what this expression means. It helps to impress upon him that a rating of 3, or average, is in no way a slur, but is the normally expected rating, and that it is the 4's and 5's, the 2's and 1's, which are departures from the normal.

A 2 (below average) rating means that the employee is "deficient enough in the trait under consideration so that he has had to be warned, criticized, or otherwise spoken to about it." This again constitutes a perfectly objective and reliable criterion of moderate deficiency. It is explained that this does not mean threatened dismissal, but is merely a warning signal, to keep the employee under observation. The manager is directed to account for all 2 ratings by indicating whether they mean inexperience or some other cause.

A 1 (poor, unsatisfactory) rating means that the employee is so seriously deficient in the trait that, if it is an important one, he is under consideration for transfer or dismissal.

Of the two superior ratings, 4 (above average) is defined as meaning that the employee "stands out above the general run of the employees of the department in respect to this trait." When asked to name the outstanding employees, the names which occur to the rater without hesitation are almost invariably those of the 4 and 5 men.

A 5 (superior, exceptional) rating means that the employee stands out so conspicuously from even the 4 men that he ought to be distinguished from them. They are of course, few and readily recognized and are ordinarily candidates for early advancement.

Two facts are impressed upon every rater: first, that it is the employees who rate above average or below average that are of most direct concern to the institution, the former because they are potential promotional material, the latter because they suggest some failure in selection, placement, training or supervision; and, second, that those above average or below average are fewer in number than the average, just because they represent exceptions and not the general rule.

"Yes" or "No" Rating. Another type of rating method which has great possibilities is one which avoids all gradations of judgment and requires instead yes or no ratings on specific points. Such a scale gets away from descriptive words and phrases altogether, recognizing that the subjective

¹ *Journal of Personnel Research*, vol. IV, No. 1, p. 2, May, 1925.

standards on which raters make their judgments are inconstant and unreliable. It presupposes, however, the setting of objective standards, the fixing of such specific requirements on the job that yes or no answers are possible. It avoids the "how well" type of questions, but sets the standard of acceptable accomplishment and asks whether this standard has been reached or not.

Such items as the following, adapted from a scale used by a large food products company, will illustrate what I mean:

Does he follow the sales plan?

- a. Always opens and uses sample case.
- b. Sells the full line.
- c. Builds assorted order around a leader.
- d. Strives for initial sales to build distribution.
- e. Uses pencil and figuring pad in sales presentation.
- f. Ties up with company advertising.
- g. Checks the dealer's stock.

If the salesman does these things, check marks would be recorded in the "yes" column on his rating record. There may still remain questions as to how thoroughly he does them, but there are likely to be enough "no" ratings to take the full time and attention of the manager in training and supervision.

Rating as an Administrative Device. It will be clear from all the foregoing that rating scales are to be considered more as *practical administrative devices* than as scientific instruments, though efforts to improve them as psychological measures should not be abandoned. As administrative devices, they have two general functions: (1) to supply measures of efficiency to supplement our present unscientific quotas and other faulty standards of sales success; and (2) to furnish the basis for systematic and intelligent development of sales personnel. Both of these functions are best served if the rating scale is developed for the specific situation from a careful job analysis. This makes possible a scale prepared in terms of the job and therefore understandable by those who are to use it.

When inaugurating a rating system, it is important to appraise the conditions which will determine its successful use. The intelligence and capacity of the raters must be gauged as well as their habitual modes of expression in judging subordinates. What is needed first is a scale that will be used rather than one that is technically good. Careful definition of the common terms used by line executives will make possible fairly reliable results for statistical purposes, but the educational purposes served are even more important. Once the interest and support of the organization is secured, improvements in the rating plan can be constantly introduced. But we do not need to await perfection in rating technique to take advantage of the excellent opportunities our present scales afford for systematic training of salesmen, both individually and in groups.

COMPENSATION OF SALESMEN

By C. K. WOODBRIDGE, *Vice President, Remington Rand, Inc.*

All agree that as we progress, new conditions constantly confront us. Therefore, with changing international, national and local conditions, there

follow continual changes in the activity of business enterprises. Business meets these changed conditions by readjustments in methods of manufacture, management and distribution. As a result of this, problems in compensation of salesmen will always confront us and all kinds of compensation plans will be subject to constant readjustment if suitable reward be given for effort.

A brief summary, showing the kinds of plans already in use, follows:

Commission Plans. *Straight Commission.* Paying salesmen a certain per cent on sales.

Sliding Commission. Paying salesmen a given commission on business up to a point, automatically increasing the commission rate as definite sales totals are reached.

Group Commission Plan. The seller's merchandise is divided into groups, each carrying a different per cent commission for the salesmen.

Commission and Drawing Account, Either Guaranteed or Applied against Earnings. In case of guarantee it may be paid only if certain tasks are daily performed, such as:

Sending in daily reports.

Sending in names of prospects.

Sending in evidence that demonstrations or calls have been made.

The commission plan places the sales expense and risk on the salesman. Many concerns could not start or stay in business if it were not possible to hire on commission. They would be unable to finance their selling. In practice, the plan develops a tendency to oversell. Calling on all prospects is neglected. The relationship of salesman and house is not close. Too much money is made in good times—too little in hard times. Salesmen say that they prefer it provided the per cent is as large as they think it should be, since it does not limit earnings.

To the above commission plans can be added the payment of expenses.

Salary Plans. *The Straight Salary.* This plan is probably used by 50 per cent of all concerns. The man with the fixed income, having faith in his house and a quality product, works as a partner in the business and increases goodwill for his firm. The salesman obeys the rules of the house in selling its goods. The plan lacks, in the minds of a great many, proper incentives for better than ordinary performance of duty.

Salary and Commission. This is a combination of the two most widely used compensation plans. It is favored in times when selling is difficult. It takes care of the salesman's fixed obligations. By it a salesman is supposed to profit through his industry.

Salary Plus Expense against Commission. In this plan, salary and expense are deducted from commission earned on sales and if there is an excess it is paid to the salesman. This plan puts a check on traveling expenses.

Salary and Commission on Sales over a Certain Amount or Quota. Making quota is an exciting game and, if the rules are fair and quota not unreasonable, it is entered into with great enthusiasm by salesmen.

Salary and Percentage of Savings Plan. In this plan the company sets a certain percentage figure to cover the expense of each salesman's territory. and, by increasing his sales or reducing his expenses, the salesman can effect

extra earnings. Each salesman is given a sales quota for his territory. Each one is similarly given a sales budget based on an analysis of the cost covering this territory in the past and modified to meet present costs.

If the salesman's quota is \$200,000 per year and his salary plus expense budget is \$6,000 per year, his given expense rate will be 3 per cent. If he increases his sales to \$250,000 he will earn an extra 3 per cent on \$50,000 or \$1,500.

If he keeps his sales at \$200,000 and reduces his total expense to \$5,000, he will earn an extra \$1,000.

Salary, Commission, and Bonus. This combination introduces the bonus or premium in recognition of excellent or superior service.

Drawing Account and Commission or Per Cent of Profits. In some instances, a drawing account takes the place of salary and is applied against commission or a per cent of profits accumulated.

To the foregoing may be added methods of financing expenses.

Bonus Plans. The introduction of an extra allowance for sales effort of excellent or superior character based on dollar sales, or units of sales, or service rendered has created many forms of bonuses. These include:

Bonus on Special Features. An amount is paid for pushing, for instance, packages more than bulk goods, a special item of profit to the manufacturer, etc.

Bonus on Net Profits. Salesmen are given a per cent on net profits.

Bonus on Total Sales. This plan encourages volume building, sometimes at the expense of profit.

Bonus on Quota Excess. A quota is assigned to each man which represents what he ought to sell normally and a bonus is paid for all sales in excess.

Bonus on Low Sales Costs. A reasonable cost of selling is established, and a bonus paid to salesman if his cost is less.

Bonus on Service to House. A bonus is paid on estimate of constructive value of salesman's work, as for example:

1. New accounts opened.
2. Calls made.
3. Sales of profitable goods.
4. Answering correspondence, etc.

Bonus on Increased Efficiency. This is designed to correct weaknesses and develop sales ability. Marks are given for:

1. Integrity (indicated by letters of complaint).
2. Aggressiveness (shown by new accounts opened).
3. Industry (number of calls made).
4. Company interest (indicated by expense account).
5. Salesmanship (sales at a profit).

The bonus fixed by the management is divided on the average efficiency marks.

Bonus on Promotional Works. This is paid for dressing windows, opening up new dealers, selling "hard nuts," etc.

Bonus on Calls. This is paid on each new call and each repeat call.

Bonus on Branch Office Sales. This plan promotes cooperative work. The bonus is paid on total sales over quota for branch and prorated among salesmen.

Task Plans. The definition of compensation as a suitable return for the expenditure of energy calls for consideration of jobs or tasks and consideration of what performance is worth.

Obviously one can develop a great many new compensation plans by adding task as a factor. Since the salesman spends a greater portion of his time, in preparation before the sale and in follow-up after the sale, than in the actual sale, a plan of paying for the task performances and giving bonuses as incentives for excellent performance is of great interest. Some of the tasks used are:

1. Daily calls.
2. Follow-ups.
3. Demonstrations.
4. Putting up advertising material.
5. Collecting accounts.
6. Specific dollars sale total.
7. Sales over and above the amount set in the task.

Payment for the tasks performed may be accomplished through commission, through salary, or through fixed amounts for each task. Its introduction involves a method for recording tasks performed and computing their value.

Properly to measure the results or value of a salesman's work, it is necessary to fix a value on each of the duties to be performed and to credit the salesman when he has performed those duties. The value of the credit must be determined. For every dollar sold and every job done, points having a certain value should be given. Penalties should be fixed for not doing the things the company wants done. The value of a point having been determined, the salesman's salary should represent, in points, the performance of his task. If .004 is the value of a point, 5,000 credits or points would be necessary to earn \$20 a week.

Factors Used in Giving Points. Basis of reward one point per dollar sale

Credit for Selling Desirable Products.

1. Easy selling advertised product.
2. Products offering double net profit.
3. Products offering triple net profit.
4. Products especially hard to sell.
5. Products that have very high repeat qualities.
6. Products that are being closed out.

Credit for Securing Particularly Desirable Business.

1. New customer who discounts bill.
2. New customer who pays within thirty days.
3. New customer who takes sixty days or over.

Half credit is given when the order is received by mail, one-quarter credit when the order is closed by the office.

Penalty for Loss of Customer, i.e., "Six months without buying."

Credit for Cooperating with Credit Department.

1. Information which results in saving account.
2. Local investigation of new account.
3. Valuable information regarding old account.
4. Penalty for bad debt through failure to report.
5. Penalty for bad debt not due to salesman.

Credit for Cooperating with Advertising Department.

1. Report on dealer advertising activities.
2. Getting dealer to use store advertising matter.
3. Getting dealer to use dealer electrotypes.
4. Securing mailing list from dealer.

Credit for Cooperating with Sales Department.

1. For every report turned in.
2. For calls made without sales.
3. Information of interest to other departments.

Penalties and Rewards for Quality of Salesmanship.

1. Misrepresenting facts.
2. Complaints from customers.
3. Goods returned "in addition to credit."
4. Falling off in sales over last year.

One large national concern in describing the point system says:

We need a measuring stick by means of which we can measure all territories and all men alike under varying conditions and in varying territories and still show the good salesman in proper comparison, whether he is in good or bad territory. We take the three largest considerations in the salesman's work, *viz.*: calls, orders, and volume, and after determining the approximate number of calls, orders, and volume in unit of retail sales which we expect to accomplish during the year, we fix on each of them a value in points to be credited to the salesman accomplishing one of the units of his job. For example:

	Points
For each call	5
Each retail order taken	15
Each unit sold retailers	1

Therefore, for each call a salesman makes he will be credited with five points, for each retail order taken (regardless of size), he will receive credit for fifteen points; and in addition, he will receive one point for each unit of sales.

We find by actual comparison with the range of calls, order and unit of sale, based upon the average experience in all territories over several years, that this valuation keeps the day's work balanced about in accordance with the importance of the work done. In territories where a large number of calls per day is possible, the orders run small; in sparse country, where few calls per day are possible, the orders run larger. A man working for distribution among the small trade would make a number of calls and take a large number of orders but the volume would be small. Another salesman in a country territory would only be able to make a small number of calls and take a few orders, but the country orders run larger and his volume would, therefore, average up his day's work.

Rating Plans. The rating plan aims to give ratings or classifications as to performance and to pay salesmen a bonus or give some recognition for this performance, on the basis that if a salesman can be helped to discover and overcome his weaknesses he will be a greater producer.

Men are rated according to the quality of their work each month.

A rating plan can be profitably used independently of the compensation plan to measure a salesman's effort, to point out weaknesses and to aid in the proper direction of effort. Salesmen should be encouraged to look ahead to a time when an inventory of their work will be presented.

Sales and Service Quota Plans of Compensation. This plan consists of:

1. A sales quota and a service quota.

This plan establishes a quota. Many quota plans are based on previous year's sales, population, business enterprises, etc. The service quota is the number of tasks that should be performed in relation to total calls.

2. A point system by which actual sales and service are translated into credit points.

3. A method by which the credit points (the work done) are translated into earnings.

4. A salary and expense allowance based on previous pay.

5. A plan for paying to the salesman the difference between his total credit points (actual sales and service performed) and the total debit points (money in salary and expense allowance advanced).

The Compensation Plan in Operation. The establishment of a salesman's compensation plan is a major proposition in marketing. Territorial assignments, changes in personnel, cancellation of orders, return of merchandise, and many other conditions make it necessary to define clearly how the compensation plan shall operate. Some of the problems which arise are:

1. How shall commissions be credited; upon the presentation of a signed order, or when the account is paid, or when in the case of exchanged goods the bill of lading on goods returned is received? By some concerns no commission is credited on a sale until full settlement is made in accordance with the terms on the order or returns received.

2. How shall special representatives be compensated? If a special representative assists a salesman in closing a sale, is the company entitled to a part of the commission on the sale, or shall it go entirely to the salesman? In some cases the company reserves a certain per cent of the commission.

3. How shall we compensate a salesman who finds on his territory goods from a territory controlled by another branch? If a sales representative finds goods in the hands of prospects that he has been working on within three months of the time they were purchased, the commission on such sales should go to him and not to the man who initiated the sale.

4. How shall provision be made for the return of goods or cancellation of sales just prior to the resignation of one man and the introduction of a new salesman on the territory? When the new salesman enters the territory and is able within three months to resell a customer who returned or cancelled goods, the commission on that sale should go to the original man who made the sale. Should the second sale be for products higher in price, the man effecting the higher-priced sale should receive the difference in commission between the high-priced and the lower-priced article.

5. When a salesman in one territory sells merchandise for shipment into another territory what is a fair division? The salesman initiating the sale should receive 25 per cent of the regular commission and the salesman in whose territory the goods are to be used should receive 75 per cent of the commission.

6. In selling syndicates, chain stores or a large company maintaining many offices, should the salesman on whose territory these various subdivisions appear receive any commission on a sale which was handled through a main office without his knowledge, or without his being a factor in the transaction? Opinion varies, but there should be a definitely understood policy.

7. What provision should be made as to the crediting of mail orders? Should the credit go to the salesman in whose territory the goods are used or not? Some organizations provide that in such cases if a salesman is able to show a record of a call during which he has solicited or demonstrated his products within a period of sixty or ninety days from the time of purchase, he is entitled to credit for the sale. This ruling often results in a stimulus for increasing the number of calls.

8. Who should receive the commission on the sale of products to a concern which after the purchase moves its place of business from one territory to another territory? Some companies give credit to the original person selling the goods, some give credit partly or wholly to the person into whose territory the purchaser moves, on the basis that the latter salesman must take care of the equipment and render service and on the ground that the original seller of the goods may have made the sale with the idea of getting the commission before the firm moved out of town.

9. If a buyer places an order with a salesman and then cancels because he wants to give the order to another man who has an adjacent territory what provision should be made? In such cases some companies split the commission, the man who originated the first order getting the larger commission.

10. When equipment is sold to concerns having an enterprise that moves about the country who should get the commission? It should be given to the man who brings in the order.

11. What is good policy when goods are sold on a rental basis? A certain rate of commission is allowed, payable only when the rental has been collected.

12. How should commissions be paid on partial payment sales? Some concerns wait for the final payment of the account, others pay 50 per cent when the first payment is made and the remaining 50 per cent when 50 per cent of the account is collected. Others pay a rate of commission as the installment payments are made. The point to watch is that there is not paid out in commission more cash than is taken from the user of the machine, because if at any time failure to comply with the contract occurs, the property must be repossessed and the purchaser usually forfeits what he has paid up to that time. An unscrupulous salesman, if paid full commission at the start, would make sales of this sort that were probably questionable.

13. How can the problem of paying commission be handled when other goods that are not the firm's own make are taken in exchange when a sale is made? Some concerns have a fixed allowance for the articles that are to be taken in exchange and after deducting one-half of that from the bill pay commission on the balance. Others deduct the entire amount and pay commission only on the cash returns.

14. When an article is sold to a firm already the owner of one or more of the same article, and within thirty days either before or after delivery of the new article one of their older units is shipped into another territory, what

policy should hold? Full discount or commission upon such sale should be given to the salesman into whose territory the unit is to be shipped.

15. When a company owning equipment moves one of its offices or any part thereof from one city to another and with it the equipment, should there be no transfer of credit for any sale? No.

16. How can an unexpected situation be provided for? The rule usually works satisfactorily that in any cases not covered by the special rules, involving interterritorial rights, the facts shall be submitted to the sales department, and the decision of the sales department shall be final.

COMPENSATION OF INDUSTRIAL SALESMEN

BY C. R. CARY, *Vice President in Charge of Sales, Leeds & Northrup Company*

The success which has followed the use of direct individual incentives has been so great, in so many different situations, that it requires some courage to discuss an incentive plan which is neither direct nor individual in the technical sense in which these terms are used when we discuss incentives.

It is only in recent years that serious study has been made of the subject of compensation for salesmen. A great variety of schemes has been proposed and doubtless used successfully. Without exception, all of these which have come to my attention have embodied, in one way or another, the effort to apply some form of a yardstick to the man's individual performance as a salesman and reward him in accordance with the results of this measurement. The plan which is described in this paper is based upon the premise that in industrial selling there are, alongside of services which may be quantitatively measured, other services which it is fatal to disregard, but which cannot possibly be quantitatively measured; it is the contention that in industrial selling it is to the advantage of all concerned to forego the advantages to be derived from a system which bases rewards only, or even mainly, on the results of the measurement of those elements of a man's service which may possibly be accurately measured, in favor of one which seeks to reward him on the basis of his total service to the company.

The term "industrial selling" may be defined as selling such industrial equipment as is normally carried on the books of the owner with a depreciation of 25 per cent per year or less. This would exclude consideration centering around those selling such articles as taps, dies, cutters, etc., which may be said to be consumed in the using. The reasons for emphasizing this limitation will become apparent later. The salesman's remuneration plan described has, without change, fulfilled its function admirably for an industrial sales group for a six-year period and we anticipate no changes in the future.

Two illustrations will serve to emphasize those services performed by an industrial equipment salesman, which cannot be measured. First, let us consider one extreme case—a man selling a simple, universally purchased, staple food product—like oatmeal—in a carefully limited territory, to a considerable number of grocery stores (excluding chain stores). His firm is selling the same product in neighboring territories, through similar men; all are governed by the same rules, are able to offer the same credit terms and ship from a common and adequate stock maintained in a nearby ware-

house; population records and food habits are well established. Under these circumstances it is difficult to visualize any influence, which that man's business activities may have for weal or woe to his employer, which will not be promptly reflected in his net sales curve or his expense account. Obviously, in this case, the thing to do is to relate the man's total income from his work to the results of his work—his sales.

Conditions of Industrial Selling. Contrast this with an equally extreme case illustrating the conditions under which all industrial selling in greater or less measure is performed. The salesman is handling a high-priced unit which has a long life expectancy; it is used for certain rather narrowly defined purposes and only the largest customers are in the market with anything even approximating regularity. The unit may be and should be altered at this or that point to adapt it to each customer's needs; it may need this or that addition to enable it to function to best advantage for the various applications. Not infrequently, in its less expensive forms it is more suitable for a given use than in a more expensive form. Even worse than this, there may easily be uses where the equipment in none of its forms should be sold, even though to a superficial observer any of them might appear suitable. The equipment is not carried in stock in finished form but is assembled, in part at least, after receipt of order in accordance with the specifications. If a mistake is made in the recommendations it may not become apparent for a long time after the event, and the responsibility has then become difficult to place. Under such circumstances a salesman may readily show a fine sales volume over a very considerable period before anything in that sales volume will give any clue to the fact that he is leaving behind him a trail of dissatisfied customers who will plague the organization for years to come.

Merely to refer to these conditions is quite sufficient to bring to mind the more important of the characteristics an industrial equipment salesman should constantly manifest but which may, in reality, be painfully lacking, without affecting his sales record for a long time.

Crediting the Sale to the Proper District. Looking at the subject from a very different angle, there is another ground for eliminating the individual incentive from the bonus system. The economic trend of the last ten years has rapidly increased the need for intensive team work within sales forces handling industrial equipment.

Previous to the World War, it was seldom that the industrial equipment salesman would not find, located within his territory, all the individuals whose approval was required before a purchase of equipment for a plant in his territory could be made. Now there are many lines and many markets in which most of the sales can be effected only after obtaining the approval of various executives, scattered perhaps between New York and California. The executive and staff in charge of production may be in the oil fields of Southern California, the engineering department in Chicago and the purchasing department in New York. All of these will have to approve of the purchase, yet one group may have greater weight than another and *a priori* no one can tell which. Obviously, it is seldom that the amount at stake is large enough to justify a salesman chasing back and forth across the continent, so the local salesman or representative in each district involved must be called upon to

take a hand. But the order, if received, comes from the purchasing agent even though, in the majority of cases, he has had to be given the least attention. However, in the case cited, the order was secured because the sales force in three districts each did its share, and who could appraise, with any accuracy, what each share was? If you cannot do this, you certainly cannot have a smoothly working system of salesman's remuneration based upon the orders received through him or from his district—it would not be fair to credit such an order solely to any one district, yet there is slim chance of making a split without injuring somebody's feelings. If the situation is further complicated by involving one or more distributing agents, instead of your own people, the case becomes positively hopeless. Parenthetically it may be added that because we see no hope in this direction, we are, with an important yet minor exception, eliminating local distributors from our scheme of distribution.

Now when an organization rewards its salesmen along purely individualistic lines, as for instance, through individual sales quotas, or sales contests of one type or another, it is only to be expected that each of those men will concentrate all of his energy upon building up his own total. He will at best give casual and indifferent attention to work which he might do for the good of the company but without effect upon his total. Also he will thoroughly resent being asked to share anything which he has the slightest ground to believe was obtained as the result of his labors.

To sum up the two reasons which led us away from any direct individual bonus: first, we expect services from the salesman, which could have but a remote influence upon his year's sales, and, second, it is more important to aim at perfect teamwork than at maximum individual performance.

So much for our grounds for sacrificing the undeniable stimulus given by a direct tie-in between a man's sales and his income.

The Leeds & Northrup Plan. The following is a brief outline of the details of the method of the Leeds & Northrup Company.

Our sales bonus, as well as our executive and subexecutive bonuses, is based upon the profits earned by the company. After all federal tax and dividend obligations are met, inclusive of a 6 per cent common dividend, the remaining profits are divided between the common stock and a main bonus fund. This main bonus fund is in turn divided into prearranged proportions for the executive, the subexecutive, and sales bonus funds. The sales bonus is in turn divided, also in accordance with prearranged percentage among the various members of the sales force. All of this proportioning is done at the beginning of the fiscal year. At that time, an estimate is prepared of the probable sales volume for the year, and on the basis of this estimate a budget of operations is prepared and an anticipated profit and loss statement as of the end of the year is drawn up. From this, after subtracting the anticipated dividend and tax requirements, the bonus fund is figured. After this total anticipated bonus fund has been determined it is subdivided by executive action into the three parts referred to above.

The sales department, because of the varied nature of our products, is organized into three divisions, each with its own sales manager. These three men, together with the advertising manager and the vice president in charge

of sales, review the performance of all sales and servicemen who have been in the organization two years or more, and apportion the anticipated amount among the various participants, each receiving an amount related to his relative importance to the company, as appraised by this group. In effect, this narrows down to a situation in which the amount each man receives is rigidly and mathematically proportioned to the taxable profits of the company, so that the information he receives as to the bonus he is to get takes the form of a straight line chart, one of the ordinates of which is taxable profits of the company and the other his bonus. Since the accounting system provides for a monthly profit and loss statement, this is used to give each bonus participant a statement, once a month, of indicated taxable profits figured for the year as based on the year-to-date figure, and from this he can see how his bonus prospects are developing.

No reference has been made to any tie-in between the sales record of the individual and the percentage allotted to him, nor is any present insofar as the current year is concerned. His sales record for the year is carefully examined, however, before the percentages which are to govern the distribution of the next year's bonus are apportioned. His record is then scanned, not only from the point of view of his success in bringing in orders, but also as to his performance in other directions—his judgment, cooperativeness, experience, technical skill, executive ability, length of service, etc., and the results of this examination are expressed, in effect, as a percentage of the sales bonus which is to be his at the next year's distribution.

Experience with the Plan. This particular method has been in use six years. There were twenty-six men involved at first; there were forty-nine in 1930. The executive management of our wage policy and profits distribution has been such that when taxable profits corresponded to a 12 per cent common dividend, the high-grade salesman would receive a bonus of about 50 per cent of his total salary for the year, while a junior salesman or senior serviceman would receive 10 per cent to 15 per cent of his salary. These figures of course vary widely, but are given as indicative of our interpretation of the general principle, that any financial incentive to be worthwhile must involve amounts which are worthwhile in the eyes of those upon whom it functions. Our experience (including a period with another but similar system) covers a period when the bonus to senior salesmen has ranged from zero during a depression to about 100 per cent of salary at the high tide of prosperity. While the salary roll is probably lower than it would be without the bonus plan, the salesmen unite with the company in the conclusion that from the financial as well as from other viewpoints the plan is highly satisfactory.

Basic Principles of the Plan. Certain principles embodied in this scheme have contributed materially to its success. The success of any incentive plan for industrial equipment salesmen will be materially affected by the degree to which these principles are embodied in it.

First and most important, *the arrangement, once made up, is perfectly understandable and also rigid for any one year*; no questions as to whether this, that, or the other, should go on his total, or whether favoritism is being shown in allocation of territories, or whether the factory is giving the square deal to each, come up. Human judgment and fallibility are, it is true, pres-

ent in the rating at the beginning of the year, but with these arguments once settled every one can tackle his job with a free mind; everyone knows that he cannot be "gypped" without gypping Uncle Sam's revenue inspectors. A large portion of the value of otherwise good incentive plans is weakened, if not entirely nullified, because of the argument and friction they engender between man and man, as well as between man and management. In fact, management is only too likely to overestimate the importance of the dollar stimulus and underestimate the importance of the braking power of argument and lack of confidence. Almost everybody prefers to work in peace, but let a salesman, or anybody else for that matter, get what he rightly, or wrongly, considers to be a raw deal, and thereafter he is only half a man on the job—one eye on his work and the other on making sure that he secures the fruits thereof.

Next in importance is *the invitation it extends to cooperativeness between man and man, district and district*. It places a premium upon enthusiastic distribution of newly acquired information or technique as widely as possible through departments. This effect is accelerated by judiciously spreading through the ranks the knowledge that service of this type scores heavily when future ratings are in the making.

The next point is that the plan *fosters a community of interest and reduces sources of friction between the salesmen and executives of all ranks*, with especial reference to those of the producing, engineering, and credit departments. In industrial selling there are, in normal course, only too many situations wherein the viewpoint of the outside men will lead them into direct opposition to the inside men who see those situations from a different angle. There is much to be gained, from an incentive plan in which the fortunes of both groups rise and fall together, and neither side can feel that the other is trying to secure a financial advantage. It was really surprising to note the immediate change in this respect which took place when this plan replaced one in which the salesman looked for their reward to an incentive plan related to their own efficiency, only, and the inside men to another and unrelated incentive plan. A most notable increase in efficiency in the overall operation of our organization, which could be attributed to no other cause than the introduction of this community of financial interest, immediately set in.

Finally, *the effect upon the man himself is important*. In industrial selling, we need more in salesmen than the ability to secure signatures "on the dotted line." Every high-grade organization selling to the industrial field expects to find in its salesmen, technical knowledge and engineering skill, diplomacy in guises unrelated to selling, judgment in bringing to light credit information, and, above all, restrained enthusiasm in the making of claims and promises. In short, we need really broad gauge business men on our sales staffs. The simple salary arrangement with no other incentive may be so used by a skillful management that it interprets clearly the ideals which the company has for its salesman, but even when so administered it leaves him an employee and nothing more. In spite of himself even the broadest-gauge man will remain colored by employee psychology. What is needed in industrial selling, as in no other type of selling, are men who are actuated by the owner motive, since out of sight and almost out of control of the manage-

ment they are constantly making decisions and taking actions which affect, in important ways, the future of the organization, even though those decisions and actions may not influence its present sales volume. Whatever the details of an incentive plan for industrial salesmen may be, the plan will lose much if it is not capable of definite and rigid interpretation and is not framed along lines which tend to give dignity to the man and to tap, not alone his sales instincts, but also all of his business instincts and abilities.

SUPERVISING SALES FORCES

BY JAMES L. PALMER, *Professor of Marketing, University of Chicago*

The term "supervision" does not have any generally accepted usage in sales management. It is construed by some executives to refer only to the actual overseeing of salesmen in the field. Others seem to feel that it is a term practically synonymous with management and includes such problems as selection and training. Other views range between these two extremes. One author may be quoted to the effect that, "supervision of salesmen consists of two great elements—field training and motivation." "Supervision, then becomes the process of discovering how nearly each salesman approaches the ideal or standard and of helping him to improve in those respects in which he is weak."¹ For present purposes supervision may be defined as the process by which deficiencies of salesmen are detected and men are induced through motivation and training to do the best possible job. Thus it involves: (1) analysis of performance; (2) the application of corrective or improvement measures. Too much emphasis cannot be placed upon this dual aspect of supervision. It is the feeling of some observers that corrective measures are often applied prior to any adequate analysis of performance. This is usually due to a failure either to maintain adequate sales records or to organize properly for supervision in the field.

Now if the above definition of supervision be accepted, it is obvious that supervision is not entirely a matter of work in the field. Motivation of salesmen may come from personal contact with supervisors or other executives in the field, from a compensation or contest plan devised and administered by the home office, from conventions or conferences held either in the field or at the home office, or through printed material prepared usually at headquarters. Similarly, senior salesmen may undergo training either in the field, at the home office by attending schools, conventions, or conferences, or through the medium of printed material. Salesmen's performance may be analyzed either by observation of men in the field or through maintenance of records. The basic problem of supervision confronting every sales executive is that of selecting such a combination of the above methods and devices as will produce the best results. It is thus expedient to consider supervision not as an isolated process of practicing foremanship in the field but as a much broader process involving the use of various devices, only one of which is field foremanship.

¹ KENAGY AND YOAKUM, "The Selection and Training of Salesmen," pp. 319-320, McGraw-Hill Book Company, Inc., 1925.

The *central problem of supervision* is that of getting salesmen to perform their various tasks with maximum efficiency. This problem may be broken down into a large number of specific problems which serve to define the task of supervision with precision. Typical problems of supervision are those of getting salesmen:

1. To sell the full line of products.
2. To distribute their efforts in proper proportion over the line of products.
3. To devote proper attention to new products.
4. To distribute their efforts properly over their various customers and prospects.
5. To keep old accounts active and at the same time secure a satisfactory number of new accounts.
6. To sell every customer as large a part of his total requirements as possible.
7. To make full and intelligent use of their time.
8. To plan work effectively.
9. To present their propositions effectively.
10. To keep their expenses at a minimum.

This list of problems is in no sense exhaustive but is suggestive of the objectives at which supervision must aim.

Such problems as those enumerated above cannot be solved nor can any industrial sales organization be brought under control unless salesmen are carefully selected and thoroughly trained; unless effective incentives are brought to bear upon the sales force; unless performance standards are established; unless the working plans and methods of salesmen are specified in advance; unless salesmen's work is methodically subjected to periodic inspection; and unless their work is carefully appraised through the use of records which reveal every significant fact about it. The omission of any one of these activities weakens any plan of control; if each is effectively developed in the management of a field selling organization it will have been brought under as close a control as can be achieved.

The most important control devices which the sales manager may employ are incentive plans, quotas and work schedules, field supervision, and records and reports. Each of these has its place in the management of field selling organizations and the importance of each varies with circumstances.

Control by Incentive Plans. Incentives are extremely important in most sales organizations because of the difficulty of getting work done properly by other means. They are applied through compensation plans and contests on the one hand and personal inspiration on the other.

Such incentive plans as commission or bonus methods of wage payment, while often extremely valuable in selling, cannot be depended upon completely to solve the control problem. There are many reasons for this, among which the following are important:

1. Incentive plans as a rule are aimed at the quantitative aspect of sales performance—at volume. Hence they have only an indirect effect upon quality and method of work. They may in fact impair quality, as when a commission plan encourages overselling or results in cream-skimming.

2. The task of the average salesman is so many-sided that it is often impossible to devise a system of incentives which will properly direct his efforts

3. Certain incentive devices, such as conventions and "pep" letters, seem to have been overdone and hence have lost much of their incentive value.

4. Many salesmen seem to be more or less indifferent to incentives and do not work harder as a result of their use.

5. Very little is known about the value of different types of incentives, and the motives which inspire salesmen. The development of incentive plans in sales work is at present largely a matter of continuous experimentation or trial and error.

The above shortcomings of incentive plans are not presented with any intention of belittling the value of such plans. In most companies they are without question very useful in directing salesmen. The extent to which they are used and the importance attached to them should be contingent, however, upon the characteristics of the individual sales job and the availability of other methods of control.

The problem of devising a compensation plan which will effectively stimulate salesmen, direct their energies into the desired channels and do justice to all parties, is in most organizations a very involved one. It requires careful consideration of many factors and conditions, and cannot be handled as a matter of ordinary routine. Many concerns have not had occasion to study their compensation problems thoroughly and as a result are using simple and crude methods of compensation which do not realize fully upon the control possibilities of compensation. Exhaustive analysis of the objectives of the salesman and the conditions under which he works will reveal whether or not incentive plans of compensation can be advantageously used in controlling him or in directing his efforts.

The simplest forms of remuneration are straight salary and straight commission. As a rule neither is an entirely satisfactory method of compensation yet both are fairly extensively used, presumably because they can be simply administered and because they avoid some of the entanglements which often result from the use of more complicated plans.

The *straight commission plan* seems to give best results under the following circumstances:

1. When the product is hard to sell and a powerful incentive is needed to keep the salesmen pushing ahead.

2. When most of the emphasis in the salesman's job is upon sales volume alone.

3. When there is little danger of overselling the customer.

4. When the customer does not repeat his purchases, except at infrequent intervals.

5. When the company's selling job is of such a nature that close control over the salesman cannot be exercised.

6. When there is relatively little danger of the practice of splitting commissions becoming prevalent.

7. When sales volume is fairly regular from season to season and through the various stages of the business cycle.

8. When variations in sales volume are largely within the salesman's control.

The assumption underlying the straight commission plan of payment is that the best way to get a man to work hard is to base his remuneration

directly upon his accomplishment so that he knows that every time he closes a sale a specific amount will be added to his income. The assumption is probably sound. The more direct the incentive—and the more objective in character—the greater its force. Despite its incentive value *the straight commission plan does not, however, perfectly serve the needs of the majority of industrial sales organizations.* There are numerous reasons for this, among them the following:

1. Industrial salesmen frequently are called upon to engage in work that does not directly produce volume, for example, the servicing of customers. Salesmen cannot be induced to carry on this work properly when paid on a commission basis because of their feeling that direct selling effort alone produces income.

2. Industrial sales fluctuate rather severely from one period to another, resulting in both excessively high and unreasonably low levels of compensation.

3. The average industrial sales organization sells numerous products and to various classes of trade. It therefore wishes to follow a selective selling plan, concentrating upon certain items and trade groups, whereas under a straight commission plan the salesmen simply follow the line of least resistance. The result is often large volume on unprofitable items and small volume on high-profit items.

4. In many industrial sales organizations there are very extreme variations in the size of individual orders. As a consequence the commission plan produces exceptionally wide variations in the income of the salesmen.

5. Factors beyond the salesman's control probably have a greater effect on volume in industrial selling than in the selling of consumers' goods.

6. In many organizations the efforts of several salesmen are brought to bear upon a single prospect, thus making it difficult equitably to reward each man.

7. In organizations in which the salesman does missionary work with the ultimate buyer, orders being filled through an agent or supply house, it is difficult to establish a base for the calculation of commissions.

Space does not permit a thorough consideration of the question as to how these various difficulties may be met in formulating a compensation plan, but a few brief comments will perhaps suggest possibilities.

A large concern selling heating equipment which has an unusually involved problem, instead of paying commissions on the volume of each salesman, pays each man a base salary plus a substantial monthly bonus. The total bonus to be distributed among the salesmen of a branch is a predetermined percentage of branch sales. A rating scale is used in calculating the bonus earned by each man. Each salesman is rated on sales performance on each product line and on various factors other than sales performance, such as adequacy of trade contact. The ratio between the total number of points earned by a salesman and the total earned by all salesmen in his branch determines the share of the total bonus to which he is entitled. It will be observed that the plan serves not only to motivate salesmen but also directs their efforts into desired channels. It emphasizes something besides total volume.

The problem of handling a situation in which sales fluctuate widely from one period to another is often solved either by paying a base salary plus a small commission rate on total sales or by paying a base salary plus a sub-

stantial commission paid only on sales in excess of quota. Either plan provides a relatively weak incentive but is probably to be preferred to no incentive at all.

The regularizing of salesmen's incomes in an organization in which individual orders vary widely in size may be effected by paying a base salary plus a substantial rate of commission upon sales in excess of quota, calculating monthly sales by means of a six- or twelve-month moving average, rather than by taking the actual sales of any one month.

The problem of compensating salesmen who work with ultimate buyers but whose orders are filled through jobbers or supply houses is very difficult to solve satisfactorily. The results of their efforts cannot be isolated. A solution which is fairly effective is sometimes found in a point system of compensation, in which point awards are based upon the various aspects of the job. Among the factors which may be rated are volume of orders turned over to supply houses and total company sales to individual supply houses. This problem is so involved, however, and arises in so many different circumstances that it is impossible to generalize concerning it. One company has solved it by the simple expedient of paying its men on a straight salary basis.

Expense Control through Compensation Plans. Occasionally in selling, compensation plans are used for the purpose of expense control. Thus in one organization a standard selling expense ratio is set for each salesman and a monthly bonus is paid if the actual ratio falls below the standard. A salesman whose standard is 5 per cent, who sells \$10,000 and incurs expenses of \$400, receives a bonus equal to a predetermined percentage of the difference between \$400 and \$500. In the average sales organization such a plan could not be used to advantage as the sole basis upon which to award bonuses or commissions, but it can often be used profitably as part of a broader plan of compensation.

One should call attention to the possibility of introducing variations into the straight commission form of wage payment. A great many organizations seem to be satisfied to use the basic plan without frills, yet it is often possible to introduce variations to good advantage. Take, for example, a company which sets sales quotas and expects each salesman to reach and if possible surpass his quota. The straight commission plan gives no assurance that the quota will be either reached or surpassed. But if the salesman is paid, say, 5 per cent on total sales in event of failure to reach quota, $5\frac{1}{2}$ per cent of total sales if he reaches quota, 6 per cent of total sales if he reaches 110 per cent of quota, etc., he is pretty apt to put forth as much energy as possible not only to reach but to exceed quota. The greater the volume the greater the incentive to push ahead. It may be objected that such a plan as this produces an increase in selling cost as volume increases but this is not necessarily true. The plan can be so set up that selling cost ratios decline as volume increases.

Many variations in practice are introduced into incentive plans in selling. The subject is a fascinating one but very broad and complex. The sales executive who will search far enough, give the matter sufficiently close study, and if necessary call upon expert counsel, will find in financial incentive plans an effective device for improving the performance of his salesmen. Careful

attention to the possibilities of compensation plans is of course especially important in organizations in which other methods of control cannot be successfully employed.

Control through Standards and Work Plans. As a further means of solving his supervisory or control problem the executive may rely upon operating standards and work plans. The first step in any control plan is to instruct the worker as to what is expected of him. In practice this usually means giving him a sales quota. The objection may at once be raised by some executives that accurate quotas cannot be set for individual salesmen. This we may concede without argument in many cases. Yet unless a salesman is assigned, at the beginning of each period, a definite responsibility of some sort, unless there is a definite understanding as to work to be done, control is out of the question. Management must then rely largely upon the opinion of the salesman as to quality of actual performance. Uncertainty as to the future argues, except in extreme cases, for flexibility of quotas rather than for their abandonment. It also argues for restricted use in the sense that they should not be employed, for example, as a basis for compensation if they cannot be set with reasonable assurance of accuracy.

In some respects the setting of accurate quotas is easier in *industrial* selling than in the selling of most consumers' goods; in others it is more difficult. It is easier in that the market for most industrial goods consists of a definite, determinable and relatively small number of buyers. Thus a manufacturer of drive chain knows that his prospects consist of all industrial establishments which transmit power. If he can secure a list of such establishments he has an excellent basis upon which to attack his problem, and in this respect is in a stronger position than, say, a manufacturer of radio sets who cannot determine exactly how many buyers there are in a given territory. On the other hand the manufacturer of drive chain will experience real difficulty in determining the amount of business which should be obtained in a certain period from an individual prospect, or from all the prospects in a certain territory. He may project past sales into the future, a useful though highly questionable procedure. Or he may succeed in establishing an index of sales potential by discovering relationships between drive chain sales and such factors as number of employees, horsepower, etc.

The logical procedure in establishing sales quotas is to employ not only past sales data but also thorough analysis of territory potentials. This requires a reasonably complete list or count of the number of potential buyers in each territory, estimates of the probable total purchases of each buyer, and estimates of the percentage of each buyer's business which the company may reasonably expect to secure. Past sales data are of course useful in making these latter estimates. But to fail to analyze each territory, by accounts if practicable, or to set quotas solely upon the basis of past sales is to perpetuate many situations in which unsatisfactory market coverage is being secured. In nearly any company an analysis of a typical sales territory will reveal numerous sources of business which may profitably be exploited, but which are never sought out in the absence of such analysis. Any executive who questions this statement should make a test analysis of one of his own best territories.

It is not contended, of course, that even the most exhaustive of market analyses will entirely eliminate errors in setting quotas. There are unpredictable factors in selling. Some of these cannot be removed by any known technique of forecasting. Detailed analysis will reduce error, however, and will uncover many specific situations to which attention can profitably be given.

It is advisable from a control standpoint to establish salesmen's quotas not only in total, but also by product groups and by trade groups or individual customers. The probability of discrepancy between quotas and performance is of course increased by such a procedure but it serves very effectively to direct salesmen's energies into desired channels.

It is advisable, when possible, to set quotas in physical units in order to eliminate any discrepancy which might be caused by price change. Two companies with which I have come in contact solve this problem by giving each product a certain weight in points, thus setting quotas in terms of points. This is obviously not necessary when a company is selling only a single commodity.

A problem which looms large in quota setting is that which results from wide variations in the size of individual orders. An adding machine salesman may fail to sell a single machine for three months, and in the fourth month secure a single contract running into tens of thousands of dollars. This situation is fairly common in industrial selling, though it is not usually found in so extreme a form as the above illustration would suggest. In such cases it may be possible to establish fairly accurate quotas over a six- or twelve-month period, but impossible to anticipate how much business a salesman will obtain in any one month. If, as is usually the case, it is desired to set monthly quotas this may be done by employing the statistical device known as the moving average. An illustration will serve to show how this might work out. Suppose the monthly volume of a salesman in the first six months of 1929 were as follows and that these same figures were to be used as 1930 quotas:

January	February	March	April	May	June
\$6,000	\$4,000	\$10,000	\$5,000	\$8,000	\$3,000

Total sales for the six-month period were \$36,000, a monthly average of \$6,000. In setting the quota for June this figure would be used instead of the actual sales figure, \$3,000. Let us assume now that actual sales in the first six months of 1930 were as follows:

January	February	March	April	May	June
\$5,000	\$7,000	\$9,000	\$2,000	\$10,000	\$5,000

It will be observed that there are wide discrepancies between the 1929 and 1930 monthly figures, and that if the former were used as 1930 quotas results would be very unsatisfactory. But the average of the 1930 monthly figures is \$6,333, which under this plan we should use as the June sales figure, as compared with \$6,000, the quota for June.

In setting the July quota the same procedure would be employed except that averages would be taken of the February to July figures, dropping January and adding July. Thus in the above illustration if July, 1929 sales

were \$9,000, total sales for the six-month period would have been \$39,000, an average of \$6,500, the quota for July, 1930. If sales in the latter month were actually \$7,000, the total for the six-month period in 1930 would be \$40,000, an average of \$6,667. This figure would be used as actual sales for July. The discrepancy between \$6,500 and \$6,667 is of course much less than that between \$9,000 and \$7,000, the two actual sales figures for July. For the remaining months of the year the procedure is simply continued.

The plan may appear complicated, but actually it is extremely simple. It irons out sharp fluctuations in month-to-month sales and is perfectly fair to the salesman. It may be operated on a three-, six-, or 12-months base to suit the needs of the individual organization. It is being used effectively by at least one company and has fairly wide application in industrial selling. It will not solve the problem, however, when sales fluctuations are extraordinarily violent.

Total sales volume is of course not the only standard of performance by which a salesman should be judged. Further discussion of this problem will be deferred, however, to a later point.

Detailed Operating Plans. When circumstances permit—and this is oftener than commonly supposed—sales quotas should be supported by work plans or schedules, the purpose of which is to provide salesmen with detailed operating plans and specific objectives. It is desirable for the salesman to know at the beginning of each period not only how much he is expected to sell but when, how, and where he is going to sell it. It is customary in selling to use route sheets but quite frequently these sheets serve merely as a salesman's itinerary. Under favorable circumstances they can very readily be expanded into control devices of real importance. Contemplate for a moment, for example, the advantages of a route sheet showing not only the towns in which the salesman is to be on each day of the month, but also the names of the customers and prospects to be called upon, the specific objectives to be realized on each call and the business to be secured from each buyer. Objection will at once be raised that it is impossible to plan the work of salesmen in such detail, that the behavior of individual buyers cannot be forecast and that too many unexpected developments are constantly taking place to make any detailed working plan practicable. These objections in individual cases may be perfectly valid, though there is ground for the belief that it is a rare sales organization which cannot advantageously make some use of detailed work plans. Their precise character, the length of time they cover, the amount of detail incorporated in them and their flexibility will depend upon the individual case, but some sort of plan can be formed to fit every situation.

The question usually arises as to whether working plans should be drafted by the salesman or by an executive. This cannot be answered categorically except to say that both parties should participate, and management should carefully scrutinize and approve final plans. Usually considerable latitude should be given the salesman. On the other hand if the central sales office or branch is well organized it will usually possess some information to which the salesman does not have access and which may affect his plan of action. On matters of territory management the judgment of the man in the field

cannot as a rule be relied upon fully; hence the importance of a careful review of working plans by an executive.

The practice of classifying accounts by *desired frequency of call* is another control device. Even when detailed work plans are not employed this device may be helpful in securing proper territory coverage. In most sales organizations customers and prospects may be divided into A, B, C, and D groupings, and standard frequencies of call may be established for each grouping. If records of actual calls made are properly tabulated and studied it is then possible to keep a close check upon the work of salesmen in contacting individual accounts.

Whether an organization merely establishes standard frequencies of call for its customers or whether it employs detailed work schedules the importance of concrete plans of some sort in selling work cannot be overemphasized. Hit-or-miss territory coverage will not give control. While it is perfectly true that planning is often difficult in sales work it can always be done in some degree. It is probably easier in the selling of raw materials, supplies and parts than in the selling of equipment. Whatever be the character of the individual sales organization, and however unpredictable be its sales situations it can do a certain amount of planning in managing salesmen. If these men are allowed to run their own courses and move from one situation to another as obvious needs or opportunities appear profit opportunities will be lost.

Control through Field Supervision. Another important control device is field supervision. The term is a distasteful one in many organizations and to many salesmen. Executives sometimes prefer to delegate practically all responsibilities to salesmen—"making them sales managers in their respective territories"—and salesmen quite generally resent being supervised. Having fully in mind the fact that there is often much to be said in support of these viewpoints there are nevertheless three distinct control functions which cannot be performed except through supervision in the field. These are: (1) inspection of the method of work of salesmen, (2) corrective instruction on the job, (3) motivation through personal contact on the job. The importance of these three functions can hardly be questioned.

Organization for field supervision of course varies widely from case to case. In industrial selling a high degree of specialization is usually out of the question, as the average organization probably does not employ over one hundred salesmen and the number is frequently much less than this. As a rule salesmen report either to a branch manager or to a home office executive. Branch managers and home office executives usually have many duties to perform other than those relating to personnel. Sales organizations selling to the retail trade and numbering several hundred salesmen quite frequently employ specialized supervisors whose major responsibility is that of periodic contact with men on the job. These men usually report to branch managers. Except in unusually large sales organizations such a practice seems inexpedient. Salesmen are relatively few in number and far apart, as a result of which the cost of maintaining a set of supervisors is apt to be very high.

Noting that a few large organizations may be exceptions, we may proceed on the assumption that the task of supervision must be handled either

by a branch or home office executive with a wide range of duties to perform. In such a case the most important supervisory problem is to induce the executive involved to devote proper attention to men in the field. In most organizations this is a real problem for several distinct reasons, among them the following:

1. The typical executive carries a heavy load and more or less out of necessity is prone to give his attention to routine matters which must be handled, and neglect matters which are not urgent and do not press in upon his attention.

2. Frequently executives do not regard field contact for development and motivation as a task of major importance.

3. In many instances executives do not regard themselves primarily as personnel executives. They seem to proceed on the theory that the best way to develop salesmen is to turn them loose, let them alone and hold them responsible for results.

4. Executives with varied responsibilities frequently have no special skill in the arts of training and motivation. They lack either the time or inclination to study personnel problems sufficiently intensively to develop effective techniques for solving them.

There are several possible solutions for this problem. If general management has the right point of view and sees to it that men in charge of salesmen are trained in this same point of view most of the conditions above enumerated may be removed. Overloading of branch executives may be prevented by providing office assistants to handle detail. Emphasis can be placed upon the importance of developing man power. After all, the capable executive is not the man who performs his own routine responsibilities well but rather the man who projects his personality throughout his organization, thus enabling many individuals to improve the quality of their work by application of the knowledge and skill which he has acquired. The effective sales organization is not the one with a brilliant salesman at its head; it is rather the one which is directed by a capable builder of salesmen. These may be platitudes but the fact remains that one may very easily find ample evidence to support the statement that in sales work there is a widespread tendency to neglect problems of personnel. It is not urged that every sales organization have a personnel manager. This unfortunately does not solve the problem. The main responsibility for solving the personnel problem must inevitably rest with that group of executives who come in personal contact with salesmen. No plan of training or motivation can be made effective unless they are capable personnel managers.

Let me cite two cases of sales supervision which lie at opposite extremes. In one company with which I have come in contact new men are taken into the sales organization, given a smattering of information about the product and the trade, and are assigned a territory. Their subsequent contact with executives is confined to occasional visits to the home office. Rarely does an executive go into the field. The salesman works alone and is expected to produce results. In a second organization new men are given a thorough training before being assigned a territory. They are visited at approximately monthly intervals by a supervisor whose function it is to observe the quality of their

work and suggest improvements in method. The company has made elaborate difficulty analyses of the job of the salesman and of that of the supervisor. The salesman is thoroughly trained in meeting difficulties encountered in selling; the supervisor is shown concretely how to handle any ordinary supervisory problems which he encounters. Each supervisor is responsible for the performance of between five and fifteen salesmen, and spends nearly all of his time on supervisory work. His is not a desk job. This latter organization is generally regarded as one of the most effective sales organizations in this country. The former is held in no particular esteem anywhere, and the company happens to have been losing money steadily for years.

It does not follow, of course, that every sales organization should have a specialized supervisor for every five salesmen. It does seem to be true, however, that the aggressive, hard working, well informed salesman who is fully supported by an alert management gets the business. If a sales force is so small or so scattered over the country as to preclude the use of specialized supervisors the problem is simply so to train branch executives or even the sales manager, and so to arrange their work that they can and will develop skill in and devote much of their time to the single problem of developing men. I have heard a purchasing agent of wide reputation assert repeatedly that nine salesmen out of ten who call on him do not know as much about their business as he does. These men are industrial salesmen. Are industrial sales managers aware of this condition, and if so what are they doing about it? Are company presidents and general managers aware of it, and if so what are they doing in the way of giving sales executives such assistance as they must have in order to solve this problem?

Control through Performance Records. The final step in the process of controlling salesmen involves analysis of performance through records of activity. This subject is a very broad one and time does not permit an exhaustive discussion of it. The facts needed periodically for the control of salesmen vary widely from case to case and depend in the individual company upon the nature of the sales job. Among the types of data which may be profitably gathered in many sales organizations are the following:

1. Sales in total, and by product groups and trade groups, with comparisons between salesmen.
2. Average number of calls made by salesmen, with comparisons between salesmen, and with each man's sales volume.
3. Number of calls, number of sales and sales volume by days of week.
4. Average number of hours per day spent in presence of customers and prospects, with comparisons between salesmen.
5. Number of new accounts obtained and volume of new business done in each period.
6. Customer mortality—volume of old business and number of old accounts lost in each period, with reasons.
7. Detailed analysis of the purchases of each major customer over a period of time.
8. Average sales volume per account compared with potential, when determinable.
9. Selling cost ratio compared with standard, with controllable and uncontrollable expenses separated.

10. Per cent distribution obtained by each salesman in each class of trade.
11. Data on salesmen's progress in handling individual accounts, showing number of calls, results thereof, sale of new items, etc.
12. Comparison of number of calls, number of presentations, number of demonstrations, number of trial orders, etc.
13. Analysis of repeat business, useful in reflecting the salesman's skill in servicing or retaining customer goodwill.
14. Cost data showing cost to sell different classes of business and if possible net profit realized thereon.

The above list is not exhaustive nor are all of these items of information useful in every organization. As I have previously stated the facts of each case determine the value of different kinds of information. It is desirable in most organizations, however, to take such a list as the above, preferably a more complete one, and check through it to see whether all facts of value in controlling salesmen are actually being obtained and utilized. Facts of course cost money and no end of expense can be incurred in securing them. Statistical and accounting analysis can be very easily overdone. This is not to be encouraged, of course, but the periodic tabulation of basic data that pay their way by strengthening the judgment of executives is an indispensable part of any system of control.

Summary. I have attempted to outline the basic elements of control in the management of salesmen. They appear to me to be motivation, performance standards, working plans, field supervision, and accounting and statistical analysis. All are important, though in varying degrees in different situations. I am of course well aware of the fact that much of what I have said is of a controversial nature, that my suggestions are in some cases not easily reconciled with certain prevailing philosophies of management. I have proceeded, however, on the assumption that control over field operations is desired, that management can more effectively direct certain aspects of sales work than can salesmen. It is probable that the assumption is justified in most sales organizations, but an exception may occasionally be found.

HOLDING SALES CONFERENCES

By C. T. ANDERSON, *Sales Manager, The Oliver Ditson Company*

Are sales conferences worth while?

Do they repay the labor and expense involved?

Which is better—a series of small conventions in different parts of the country or the big, national, "hippodrome" performance?

These are some of the questions which confront sales managers. They are real problems for the concern that has never held sales conferences, or that has held them unsuccessfully. Sales conferences can be productive of increased sales, enthusiasm and loyalty, or they can be costly fizzes. Firms which hold successful sales conferences regard them as desirable and necessary. The others try to forget them and resolve never again to attempt the undertaking.

Sales conferences may be divided into two classes, first, the big national convention at which the entire selling organization is brought to a central

point and, second, the zone convention at which the entire selling organization is gathered at strategic points in various parts of the country. Both types have their advantages, but this is about all that they have in common. They require different handling and cannot be expected to accomplish the same results with equal effectiveness.

Advantages of the Big National Convention. 1. The national convention gets together all the men of the selling organization, enabling them to become acquainted with one another, with the officers of the company and the department heads at the home office. Men new in the organization meet the old-timers. All present become acquainted with the headliners in the sales organization, whose names have been featured in letters, bulletins and house magazines.

2. A large convention cultivates *esprit de corps*—the men see that they are members of a large family. They establish contacts and relationships which increase their interest in the business and bind them to it.

Men coming in contact with officers and department heads are enabled to iron out petty misunderstandings and difficulties about which they have been corresponding. It is often amusing to see how some salesmen build up in their minds an utterly wrong conception of the type of individuals there are at the home office. Very often a few minutes' conversation, a hand clasp and an expression of goodwill is enough to entirely wipe out misconceptions of long standing.

3. Men can be conducted through the factory and offices, to see how the goods are manufactured and how the various departments function. They see how the factory is slaving to keep production up to sales. Their attention is called to the numerous and rigid inspections designed to make their work as salesmen easier. When they are conducted through the various departments of the office they begin to have an appreciation of the difficulties under which department heads labor. They see that the credit manager is not a devil with cloven hoofs and horns on his head, but a real human being who is trying to do his best to get in money and still accommodate customers.

4. A convention at headquarters enables men to see tests, demonstrations and displays of the product which often it is not possible to stage elsewhere. They can ask questions and get information on raw materials, construction and performance which it is difficult to give by mail.

5. A large convention engenders enthusiasm. Its mere size and mass is impressive. Men are impressed with the fact that the company is doing a business of national, or even international scope. They are proud to belong to such a large organization. A large audience is an inspiration to a good speaker and inspirational talks given before a large meeting generally have more fire and ring than those delivered before smaller groups.

Disadvantages of the Big Convention. 1. The big convention takes all the effective men from the field at the same time, with the result that sales drop. Not only do they drop for the period of the convention, but for several days before and several days after. Despite the urge of the sales managers that each man coming to the convention bring with him a bunch of orders, the excitement of anticipation and the necessary preparations for leaving generally interfere seriously with sales for several days before the men leave the territory. On their return they find an accumulation of office matters, service calls and other unproductive work which keeps them from selling. This is saying nothing about the period some men seem to need to get back into the harness and recover from the effects of the convention.

A week's convention at a central point in the United States can easily kill two-thirds of a month. This is especially true if a number of the men come from far distant points such as the Pacific Coast, Canada, Southern Texas, Florida, etc.

2. The expense of a big national convention is very heavy: railroad fares to and from distant points, brass bands, banquets, special decorations, and a host of small items mount to a staggering total.

3. A big convention held at the home office generally interferes seriously with the work and operation of the home office departments. Salesmen are apt to feel that just because they are on a vacation and have nothing to do, therefore the department heads have unlimited time on their hands with which to visit the salesmen, answer their questions and entertain them.

4. It is difficult to put across an educational program at a large convention attended by several hundred men. A certain amount of generalization is necessary so that the remarks made will apply to all sections of the country, and the various types of individuals.

Unless great care is exercised it will not be possible for all men in the hall to see the charts on the platform, demonstrations that may be made or to hear the speakers. The result is that the men on the edges of the crowd soon lose their interest and begin to talk among themselves or go to sleep.

5. At a large convention it is very seldom that time can be allowed for questions or discussions. The result is, one never knows how well certain talks are going across, or how many men are leaving the convention with only a hazy understanding of the subjects on the program.

Advantages of the Small Convention. The small convention, whether held at the main office or in various cities convenient to men in surrounding territories, differs in more than size from the large convention, and therefore requires different planning and technique of handling. Some of the advantages of the small convention, or conference are as follows:

1. Generally a series of small conventions can be held at less expense than a large one. This is due to the saving in railway fares and big entertainment features.

2. A local or zone convention can be held in two days time, whereas it is seldom considered worthwhile to bring all the men in to a big national convention for much less than a week.

3. At a small convention of twenty-five or fifty men all the boys become acquainted with one another and the presiding officer has an opportunity to shake all of them by the hand and even have personal conferences with a large number of them—things that are hardly possible at a national convention even when plans are made to meet all the men present.

4. Perhaps the greatest advantage of the small conference is that it enables excellent educational work to be done. When held in various parts of the country it is possible to make a local territorial application which must be omitted in a national convention. Time can be arranged for questions and answers. Men feel more free to ask questions and to reveal their ignorance in a small conference than they would before a large crowd.

Disadvantages of the Small Convention. It is oftentimes difficult to get up a rousing convention spirit in a small group of men. This is especially true if the conference is held in a district office with which most of the men are familiar and if there is not some officer from the home office to lend a glamour

to the occasion. The meeting has not the novelty of a convention at a far distant point and there is absent the natural enthusiasm which is created by a big mob having a good time.

Men like to get acquainted with the home office folks. They want to see the people with whom they correspond and like to form personal contact that they may get inspiration and information which it is difficult to convey by any other means.

Many men regard a national convention as a vacation. They are glad of an opportunity to take a trip out of their territory at the company's expense and are disappointed if national conventions are not held about every so often. It is also true that many men, especially those working on a commission basis, do not like to see national conventions held too frequently because it means a decrease in their earnings during the time they are away from their offices.

The Secret of Successful Sales Conferences. As in most undertakings, careful planning and efficient management spell the difference between success and failure. In few business undertakings do these two principles yield greater rewards when observed and greater disappointment and trouble when disregarded.

Some of the important things to plan for are as follows:

1. Why should the conference or conferences be held? What are the objects to be accomplished? What are the principal messages which the firm wishes to deliver? Conferences should not be called simply because, according to tradition, it is time to hold one. The men who attend conferences will never think any more of them than the management and if the management is not thoroughly sold that a conference is vitally important and necessary, the men will be quick to detect the absence of motive.
2. How can the objectives best be reached—by means of a large convention or a series of small conferences? If the purpose of the convention is to celebrate a successful year, to honor leaders in the organization, to show men an addition to the plant or to bind together a sales organization that shows rifts, then obviously, a big convention at a central point is the thing. If, on the other hand, intensive educational work has to be done; if local territorial problems have to be solved; and if close personal contact is desirable, then the small conferences in various cities would probably be better.
3. Just what, specifically, are the subjects (with their subheads) that are to make up the program, and who are the best persons to talk on them?
4. What is the best arrangement of the talks to secure climax and avoid anticlimax? What arrangement seems logical so that the program will grow in interest as it progresses and the subjects will follow one another in some sort of order?
5. What is the best time to hold the conference or conferences, in view of expected sales volume for certain months or seasons, approaching sales contests or holidays? Perhaps nothing will so alienate the affections of salesmen's wives as to bring their husbands into a conference over Thanksgiving or to force them to leave their homes on Christmas Eve.
6. What is needed in the way of models, displays, decorations, signs, literature, hotel accommodations, entertainment and the multitude of other details which, though small, are of vital importance to the successful running of a convention.

These questions should not only be asked and answered, but should be made a matter of record. Duties should be delegated to those competent to discharge them and the whole convention arrangements should be placed in charge of one man whose word is law. Everything must be planned in advance and then the plan adhered to and worked. Conventions which are only half planned are sure to be disappointing. The sales manager who expects to fill up half his program somehow, by means of delays or unforeseen events or inspiration of the moment, is headed for disaster.

Hints on Writing the Program. Every minute of the entire convention period should be accounted for. The program should state when the convention begins, the duration of the talks, the time and duration of recesses and luncheon periods, as well as the names and titles of the speakers.

It is a moot question whether convention programs should be distributed to the men attending or whether announcements should simply be made from the platform. Some say that the distribution of the programs shows the men its plan and purpose, thereby stimulating enthusiasm and eliminating the asking of countless questions as to the plans for the convention. Others contend that better attention and attendance is secured if the men are in doubt as to what the next subject will be. Some men are inclined to absent themselves during the delivery of certain talks with the subject of which they feel thoroughly familiar.

The best programs are not necessarily those in which the speakers are all officers of the company or men of national repute. The guiding principle in selecting speakers should be to pick out men who can speak with knowledge, earnestness, conviction and enthusiasm on the subjects assigned to them. They should be men whose delivery is good and who can talk from notes instead of having to read from a manuscript. Some men can read very interestingly from manuscript but others do so in a dull, droning voice which acts as an effective sleeping potion.

Salesmen and field managers should have a part in the program. Otherwise the men will feel that they are being merely talked to and lectured at. If they have a part in the program they will feel they are an integral part of the convention and that their good work is being recognized.

Contrary to the belief of many, it is not at all necessary that all hours during which the men are not listening to speeches from the platform, be filled with theatre parties, dinner parties or parties of other kinds. To be sure, most men expect that there will be some entertainment during a convention, and would be disappointed by the entire absence of some form of recreation. At the same time, it must be borne in mind that it is the hardest kind of work for an active salesman to sit hour after hour, day after day, listening to someone talk from a convention platform. This is proved by the way men fidget during a convention and by their readiness to get back home when the convention is over.

After an arduous day in the convention hall many men would prefer to go to their hotel rooms and rest. Others want to go to the golf links or take some other form of exercise. Still others thoroughly enjoy getting together with other men, talking over their problems or simply having a quiet evening together.

Too many banquets, theater parties and other forms of entertainment drain the nervous energies of the men. If one does not give them an opportunity to rest he will have a heavy percentage of sleepers during the latter part of the convention.

If a banquet is planned, the men who are to speak should be notified in advance and the others should be assured that they will not be called on for after-dinner speeches. Those who have to do considerable public speaking are apt to overlook the fact that many men stay away from conventions as a matter of policy lest they may be called upon to say a few words. They may be seen at conventions, appetites gone, color gone and having a thoroughly miserable time.

Unless one is calling on an experienced speaker, one should not ask one of the salesmen to get to his feet and "say a few words to the boys." Most of them do not know what to say, and as a result do not say anything except a few banalities and common-places. Such speeches only clutter up the program and make the speaker feel like an ass. It is far better to assign a definite topic to the man and ask him to tell the boys what he knows about that subject. One should pick out something about which he is sure the salesman is familiar and for which he has some liking and enthusiasm.

One should avoid vast general subjects such as "Why I Like This Business" or "The Future of this Business as I see it." Instead, one should have the men talk on such subjects as "How I sell Models 231 to Banks," "The Three Closing Arguments I have found most Effective," "How I Landed the Contract for the A B C Company."

In introducing a speaker one has to be careful not to steal all his thunder by stating the main conclusion of his talk or even the principal points of it. This robs the talk of all freshness and surprise, with the result that the salesman begins his speech feeling that the story has already been told.

In the case of small conferences men can often be induced to talk and timid speakers encouraged, if the members of the conference gather around a table, and if the speaker is allowed to remain seated.

Distracting Attention from the Speaker. If those in charge of the convention remain on the platform during the speeches they should at least appear to be interested in what the speaker is saying, even though they may be bored to extinction.

If they allow their gaze to wander over the hall, if they talk among themselves or take out papers to read, the men will look at them instead of the speaker.

If a book is being explained and demonstrated page by page, from the platform, the speaker alone should have a copy. If the conference is a large one there should be numerous charts or large photostats so that all the men can see plainly what is being talked about. The books themselves should not be distributed until after the talk. If they are passed out before the talk or during it, the men will start to look at the books, pay no attention to the speaker and thereby lose nine-tenths of his message.

In selecting a convention hall, the greatest care should be taken to get one which is quiet, well-ventilated and of the proper size. It is exceedingly tiring to speakers and distracting to the attention of the listeners if there is a constant disturbance from street noises, elevators or running machinery.

The hall should be so ventilated that the air can be kept pure and fresh without drafts.

If the room is too large the speaker's voice will echo and the men are apt to feel lost. If, on the other hand, it is too cramped, there is certain to be discomfort and bad ventilation.

Recesses should be given as often as necessary in order to keep the men alive and awake. Those who warm office chairs are perhaps accustomed to remaining seated for hours at a time, but the salesman who is supposed to be scuttling around the streets, making active use of his legs, grows exceedingly restless if recesses are too infrequent.

The men should get out of the room and outdoors. Someone should be appointed to put them through vigorous setting-up exercises. Five or ten minutes spent in this way will pay big dividends in increased interest and enthusiasm.

A sales conference, large or small, can be of the most fascinating, absorbing interest—an event never to be forgotten and often referred to, or it can be the most tiresome, time-consuming experience in the lives of the men attending it.

If a convention is successful it can be capitalized by making frequent reference to it in subsequent letters, bulletins and house magazines. The talks can be printed and issued at intervals so that the men will be able to review them at their leisure. If, on the other hand, a convention is a failure, the best thing to do is to forget it, with the resolve that next time the convention will be better.

Attitude of Men Influenced by Home Office. How men will react to a convention is largely a matter of policy on the part of the home office. If it has been the custom to hold meetings made up mostly of poker parties, carousals, excursions, and comic talks, the men will get to look for these things whenever they are called to headquarters. If on the other hand, they understand that they have been brought together for a serious purpose, that the convention is costing the company thousands of dollars a day, and that it is being held in order that the men on the firing line may become better and more efficient, their attitude will be wholly different.

Conventions have been held that have represented the hardest kind of work and the closest attention on the part of the men, from one end of the week to the other. At some of these there has been only a minimum of entertainment—a smoker, or possibly a simple banquet—and yet men have gone away expressing heart-felt appreciation of the good time that was given them, and gratitude for the help and inspiration they received.

The vital importance of careful planning and efficient management needs emphasis. Nothing will kill interest and enthusiasm on the part of the men so quickly as signs of indecision, changes in the order of the announced program, failure to make provision for circumstances that should have been foreseen.

If men are not properly taken care of when they arrive in town, if they are herded together in uncomfortable quarters, and if they see the heads of the business looking worried, running about in distraction, and failing to measure up to the situation, their estimation of the house will take a decided drop.

Sneering remarks will be made that the company is playing true to form, that it is no wonder goods are not shipped on time, or that it is impossible to get prompt answers to correspondence.

On the other hand, few things inspire such admiration and enthusiasm for a company and its message as a convention program, particularly a large one, which is run with military precision and clock-like regularity. It is a matter for pride indeed when the selling organization compliments the house on the efficient manner in which a large convention has been conducted. Such a convention is successful and the officials in charge may know that it has attained the objective set for it.

SALESMEN'S EQUIPMENT

By R. J. COMYNS, *Manager Membership Service, American Management Association*

Discussion of the salesman's equipment without regard to a specific product or line is necessarily broad. It is most useful when devoted to a statement of generally applicable principles rather than to illustrations which, no matter how profuse, could be applied directly by only a fraction of those seeking solutions to their equipment problems or improvement in the equipment at present provided their salesmen.

The term "equipment" includes everything that the salesman carries to aid him in making the sale, even to the advance cards and business cards provided by the house. It means very different things in different sales organizations. It ranges from the prospectus of the bond salesman to the ten or fifteen trunks which must still be carried by salesmen in some lines. It may mean the product to be sold itself, sometimes with accessories for demonstration. It may mean working models, a line of samples, and in other cases, catalogues or binders of illustrative literature. The term also includes those report forms and materials furnished the salesman to facilitate his keeping contact with the house and performing the duties assigned him, but the form and content of these need no detailed discussion here.

There are two fundamentals to be striven for; *convenience of form and force of selling appeal*. Equipment is designed to grip the prospect's attention, arouse his curiosity and appeal to his imagination. It should enable the salesman to illustrate the points made in his selling talk and, on the basis that "one picture is worth 1,000 words," drive home his selling points more effectively.

The salesman's talk appeals to the prospect's sense of hearing. Equipment is designed to bring into play those other senses—sight, touch, smell, and taste—to which it is advantageous to appeal in the sale of any particular product. It is designed to visualize the product for the prospect and more especially visualize as vividly as possible, his advantageous, pleasurable or profitable use of it. Needless to say, unusualness and pleasing appearance have a psychological value.

Physical Form of the Equipment. If the salesman must carry his equipment throughout the day, care should be taken not to overload him. It is so easy to add just one more piece without visualizing the total effect. Three

o'clock fatigue is a very real thing with the salesman carrying an equipment bag or sample case throughout the day, though he himself may not realize it. It saps his energy and a tired salesman is likely to lack forcefulness. Greater care than is usually exercised should be taken to make handles of sample cases and equipment bags comfortable to the salesman's grip.

If the salesman travels constantly by automobile, this matter of weight is not so important up to a certain point, though it must be realized that the salesman must often park his car a block or more from the place of his call and oftentimes has considerable distance to travel inside the building. And even in cases where equipment must be carried but a short distance, awkwardness should be avoided. It is difficult for the salesman to appear dignified and make the right approach if he is weighted down with an unwieldy burden. If a salesman must carry a heavy machine into an office or store for demonstration, provision should be made for carrying it easily and comfortably. When, because of the nature of the machine, this cannot be accomplished, the salesman must be instructed to pick his spot the moment he enters and put his machine down before really making his approach.

Compactness is almost as important as weight. In fact if, without impairing effectiveness, the salesman can be supplied with equipment which can be carried in his pockets, this should be done. While it is not well to emphasize or even admit any disadvantage in an equipment bag, it cannot be gainsaid that it is becoming increasingly difficult to get in to see certain classes of prospects, especially in large cities; and reception clerks, telephone operators and even office boys do at times, after one glance at what is obviously selling equipment, accord a special brand of courtesy reserved for those who obviously have not called to buy anything. However, the equipment bag or sample case cannot usually be avoided.

While equipment, to be kept fresh, must be protected, protective material aside from the equipment proper should not be allowed unnecessarily to increase bulk. The loose-leaf binder which does not, because of its mechanism, take up too much room still remains to be developed. Leather covers increase weight and size of equipment. Both should be used sparingly. Binders used should allow the equipment material to lie flat and to be easily turned. At times, an easel-like binder, which may be set up on the prospect's desk and allow the presentation to take the form of a chart talk, is effective; but in case the prospect is likely to be embarrassed by having others know that he is in the process of being sold something, it should be avoided.

Though the material used by the salesman in his presentation may be found in the company's customer literature, it may still be wise to prepare a special piece of equipment for selling work. This will avoid the necessity of the salesman carrying three or four books or booklets in order to use a page or two in each and will also afford an opportunity to make the material more suitable for presentation work as regards type size, layout and general visibility. A type which might be quite suitable for a prospect to read is seldom ideal for material which must be placed before a prospect by a salesman.

While variety will keep the prospect's interest fresh and while dead sameness is to be avoided, the equipment should not look like a hodgepodge of unrelated material.

In equipping the trunk-line salesman, special attention should be given to packing and unpacking and accessibility of individual contents. Adequate protection should be provided for samples with minimum effort on the part of the salesman. Sample lines for a current season's selling cannot ordinarily be replenished, at least not in time if the salesman is traveling fast in a busy selling season. If goods lend themselves to effective display fastened in trunk trays, attractive display will be assured and the salesman will save time and effort in setting up in a sample room. Of course, wardrobe trunks have largely solved the problem of ready-to-wear lines. Care should be taken that no one trunk exceeds the railroad weight limit and that excess baggage is generally held to a minimum.

Special attention should be paid to *seeing that the equipment is kept fresh*. It has a tendency to become dog-eared and unsightly so gradually as to escape the salesman's attention when he is handling it every day. One evening a week or a month should be set apart when the salesman will go over his equipment and replenish with fresh material.

Equipment Bags and Sample Cases. If the bulk of equipment will allow it, the envelope type bag with no more than two gussets, if they be necessary, is to be preferred to the bag with a handle. It is less obviously selling equipment. A prime requisite of the equipment bag is that it be capable of being quickly and unostentatiously opened. A salesman, seated before a prospect, struggling with the buckles of straps is a sorrowful object. Two ordinary lift-the-dot fasteners will usually be found effective. The zipper or talon fastener has possibilities. The bag should be so constructed that once opened it remains open. The salesman should be able to produce equipment from his bag, either on the desk or on the floor beside his chair, without taking his eyes off his prospect or otherwise interrupting the flow of the presentation.

Sample cases should be constructed so as to be as light as possible in themselves. Easy opening is again a requisite feature. In so far as possible, the arrangement should be such that the goods are arranged for display right in the case. Either in the sample case or in the equipment bag, a place for everything and everything in its place is fundamental. The salesman should be trained to put the material back in such a manner as to have it ready for the next prospect without the necessity of rearrangement. This should be made easy without too many partitions or compartments which add to bulk and weight. Frequently it will be found best to have the equipment bag or sample case especially constructed to meet the particular needs of the line rather than to depend upon those which can be found in stock.

Substitutes for Samples. The development of the printing, engraving, lithographing, embossing, and other arts has done much to obviate the necessity of carrying full sample lines and to reduce the bulk which must be carried by the salesman. Today one rug, or corner of a rug or other floor covering for each quality may be carried and the rest of the line shown in a book of beautifully colored and natural-looking designs. Fabrics of all kinds can be pictured in a marvelous way, even those with raised design being shown with absolute naturalness by an embossing process. New methods are being developed every day to tie in with this tendency of cutting to a

minimum the bulk which the salesman must carry and to substitute pictures for actual goods. The sales manager should have in mind constantly these possibilities both for cutting his equipment costs and for lightening his salesman's load.

Working Models. Wherever the product lends itself to this possibility working models may profitably be developed. One illustration will suffice. An organization producing a movable rack for the efficient handling of drums of oil, acids, and other liquids provides the salesman with a small model reproduced in minute detail and a small drum so that the actual working of the device can be demonstrated right on the prospect's desk. Many machines and other products are sufficiently small in themselves to be carried about for demonstration. In that case every accessory for efficient demonstration should be provided and made accessible with a view to allowing the salesman to slip easily, quickly and naturally into the demonstration. If there is any awkwardness or fumbling at this point, he is likely to be asked not to make it.

Photographs and Moving-picture Machines. Modern photography offers many effective possibilities in the field of equipping salesmen and they should not be overlooked. At times, actual photographs convey an authenticity and create a confidence not so easily obtainable by any other type of illustration. Their possibilities are almost limitless. Incidentally, a modern, folding type of the stereoscope which was to be found in every farmhouse parlor of the nineties is being used today to add a third dimension to photographs and to rivet the prospect's attention on the details of the picture.

Where it can be used, the small moving-picture projector combines many of the advantages of the photograph, the working model, and the demonstration and presents in interesting action many things that the prospect could formerly learn only from the salesman's talk. Here again, ease of carrying is a factor and ease and speed of getting into action essential.

Letters of Endorsement. As a matter of fact, the use of endorsement letters is confined to a comparatively few selling propositions. Actually, they have a wide and effective application in fields where they are never used. Care must be exercised to see that each letter says something succinctly and forcibly. This can be accomplished by actually writing the letter and asking the user of the product to sign it or by picking up some statement of commendation he has made and asking him to put it in letter form. The salesman should be encouraged to supplement those with which he is provided by local letters from his territory. A mere copy of a letter will not carry anything like the same psychology as an actual reproduction. For small organizations, they should be photostated. For large organizations, letters can be exactly duplicated as to type, style, ribbon color, letterhead, signature, and paper so as to be scarcely distinguishable from the original. A variety of the endorsement letter is a number of photographs of outstanding installations which speak for themselves.

Charts and Statistics. The ordinary prospect is not figure minded. Quotation of a mass of figures and statistics will leave him in a maze. When statistics and figures are necessary, therefore, they should be illustrated by quickly understood and interest arousing charts, graphs or actual pictures.

The figures and statistics may be clear to the salesman and sales manager. It is best to make sure that they are equally clear to the prospect.

In the sale of any proposition which will allow of it, there should be one piece of equipment in the form of a spread, approximately the size of the ordinary desk blotter, outlining the whole sales story. This will enable the salesman to visualize the story for the prospect but, probably more important, it can be spread over other letters and papers on the prospect's desk and thus prevent their diverting his attention.

Acquainting the Salesman with the Equipment. It is not enough to place the equipment in the salesman's hands. He must be informed of the reason for each piece, instructed in its use and trained in facile handling of it. This will be an integral part of the sales training system. When salesmen are recruited and obliged to study for a period before active connection or coming into training class, each piece of equipment can be mailed one day apart starting with the bag. Attached to each will be a slip "selling" the particular piece of equipment, instructing the salesman in its use, giving the reason for its existence and tying it up with the sales manual which the recruit will be studying at the same time.

Equipment Not a Static Problem. In this discussion of equipment, the endeavor has been to secure the constructive thinking of the reader on his own specific equipment problem by discussing the broad fundamentals involved. Equipment should never be static. The progressive sales manager will always be looking for new ideas which can be used effectively, and constantly developing or improving pieces of equipment.

SALES MANUALS

By R. J. COMYNS, *Manager Membership Service, American Management Association*

Preparation of a sales manual, both as to form and contents must, of course, be considered in relation to the nature of the product or products, selling problems, marketing channels, type of salesmen and sales training methods of the particular company for which it is to be compiled.

What the Sales Manual Is. One of the biggest needs of business, for purposes of scientific discussion, is a common understanding of terms. The term "sales manual" is at times applied to literature designed wholly or in part for use with the prospect. This discussion will be confined to that written record of the experience, policies and practices of an organization designed exclusively for the instruction, guidance and inspiration of the salesman. The life insurance man's rate book, the hardware salesman's catalogue, the wholesale grocery salesman's price book are not sales manuals. They constitute selling equipment.

This should not be construed, however, to call for needless repetition in the sales manual. If, for example, no different, more detailed or more technical description or discussion of the products than that contained in the company's customer literature is required for the salesman, that literature should simply be declared a part of the sales manual and instructions for its study given. In many instances, at least, nothing better can be provided for the salesman than

the description and indicated uses of the products prepared for the customer. If, as is sometimes the case, the sales manual contains detailed technical information and formulas which the salesman cannot hope to carry in his head and the salesman must consequently carry his manual with him on his selling calls, faulty form and compilation is indicated. The obvious solution is to separate physically those parts which are purely sales manual and those which are purely selling equipment.

What the Sales Manual Should Be. Ideally, the sales manual should be a statement of all that experience has proven best in the sale of the company's product, a thorough explanation and exposition of the company's policies as they apply to sales, and a complete guide for the salesman in the performance of his every duty. Few reach this ideal. The sales organizations not provided with any guidance other than that passed on by word of mouth are in the great majority. Most manuals in existence are incomplete and inadequate. Quite often the sales manual is merely a nebulous something in someone's mind which is going to be whipped into shape when the time is available—and which can be dashed off in three or four evenings of concentrated work. Frequently, there is no one in the organization combining the type of mind, necessary knowledge and time to prepare one. It is a mistake to regard the preparation of a sales manual as anything but a full time job while it is being compiled.

Uses of the Sales Manual. A consideration of the uses to which a sales manual is to be put will do much to dictate its contents and form. It should constitute the main textbook of any formal course of sales training given. While it cannot contain in full detail everything given to salesmen in the training course, it should be a digest which will remind the salesman of those details after he is in the field. The sales manual together with a study of sales equipment, may constitute the only training given the salesman. In some cases, this must be so. Sometimes it is planned to be studied by the new salesman before he enters the training course—especially those portions containing the standard selling talk, instructions for use of equipment, and details of the product or products to be sold. And it should be a source to which the older salesman returns again and again for stimulation and to be reminded of things forgotten.

What the Sales Manual Should Contain. Naturally, the contents of sales manuals will vary. The following outline is designed to be suggestive and rather all inclusive. Not all manuals will cover all of the topics mentioned. Some may require one or more not mentioned. The manual may contain:

Introduction. Stating the purposes of the manual, selling it to the salesman and giving instructions for its most efficient use. This, if possible, should be inspirational.

History of the House. This may contain some reference, historical or otherwise, to the industry as a whole. The small beginnings of the business; the courage, industry, integrity and far sightedness of the founders; development and constant improvement of products; physical growth; present standing in the industry; outstanding executive personalities of today; are some of the topics which may be touched upon here.

The Products. Description of the products; unless, as has been suggested, this is adequately covered in other literature.

Uses of the Products.

The Standard Presentation. The word "presentation" instead of the more widely used term "selling talk" is used here advisedly. A sales presentation is not merely a talk but a combination of talk with the effective use of selling equipment, and the standard presentation should include instructions for this. There is vast difference of opinion as to the value of a so-called "canned" presentation. Not every product lends itself to a standard presentation given each time in the same way and with the same balance and emphasis. The fact remains that anything which one must say frequently is inevitably said in much the same way each time. There can be little question that the strongest, most concise and most effective ways can advantageously be worked out for the salesman, if only as a basis for developing his own method more quickly and more effectively than would otherwise be possible. Though each individual presentation may be somewhat peculiar to itself, every one that a salesman makes tends to become an assemblage of standard parts. In so far as is possible, the sales manual should provide these standard parts.

Notes on the Standard Presentation. One of the commonest tendencies of salesmen is to get down to a presentation of bare facts to the exclusion of those imaginative and emotional appeals which really sell goods. An explanation of the reason for their being included in the presentation will tend to prevent this. Many things may be said with equal effectiveness in more than one way. Suggestions may be given for the elaboration of certain points. Instructions as to emphasis may be desired. Suggestions may be given for handling situations which may arise at given points in the sale. To interpolate these in the standard presentation itself would tend to break its continuity and render it difficult to read and study consecutively. Providing for reference to numbered notes will obviate this. If the form of the manual otherwise lends itself to it, a good plan is to have the presentation run along continuously on left-hand pages with corresponding notes on the right-hand pages. This will necessitate some careful editing so that presentation and notes are of approximately the same length.

Instructions for Demonstration. In the case of products where demonstration is essential, desirable, or possible.

Handling Objections. The term "handling" is used advisedly in place of the more common "meeting" or "answering." Many objections should be anticipated rather than answered. Most sales manuals make the same mistake of listing objections and giving for each one a perfectly logical answer but one which is a head-on collision and an argument. Sales are not made that way. All objections and questions need not be taken with equal seriousness by the salesman. The astute salesman's aim is to handle the objection or question as briefly as possible, slip around it, and get back on the track of positive presentation of the advantages of his proposition. While this is a difficult thing to get into the printed word, it should be kept in mind in preparing this portion of the manual.

Sales Equipment. A discussion of each piece of equipment supplied the salesman for field work with suggestions for handling, most efficient use, arrangement and replenishing. This will include instructions or suggestions for the display of sample lines.

Reserve Selling Talk. Every salesman needs selling points in addition to those furnished him in the standard presentation and in answers to objections. On occasion, he needs ability to approach the same selling point from several different angles. Especially is this true when, after an attempt to close has failed, he must swing into additional reserve talk before attempting another close. This section may contain more or less complete presentations from

an angle other than that of the standard, side lights or stories which illustrate points, and effective methods of closing the sale. A separate section on closing tactics may not be amiss.

Seeing the Prospect. Many sales manuals and some training courses blithely ignore one of the salesman's greatest problems—that of being able to see and get his story before an adequate number of prospects each day under proper conditions. This section, for most products, can well go into considerable detail on methods of approach, handling difficult situations that arise in the first few moments of the interview, effective methods of getting into the prospect's office or otherwise creating conditions favorable to the interview, the effective use of the telephone in making appointments, and the like.

Organization and Handling of Territory. This may include instructions for building a prospect list, discussion of the different types of users of the company's product and the appeals which may be made to them, efficient routing and use of time, depending on the nature of the business.

The Company's Advertising. The salesman will or should receive continuously from the advertising department information as to current advertising, but he should be given in the sales manual the reasons for the company's advertising policy, type of copy, selection of media, and specific instructions on the part he is expected to perform in the company's advertising plan and how most effectively to talk advertising to his customer.

House Policies. The salesman should be given in the manual knowledge of the other departments of the inside organization sufficient to enable him to cooperate effectively with them and to make him feel that he is an integral part of the organization. Possibly an organization chart should be included. The company's trade practices, discount policies and the like should be discussed here.

Manufacturing Processes and Policies. In many cases, such a section may not be at all necessary. But in others, some information of this kind is essential to the salesman. Care should be taken, however, not to make it too technical and detailed.

Rules and Regulations. Under this heading, the salesman should be given detailed instructions as to what is expected of him in the matter of reports, expense accounts, handling of orders, opening of new accounts, credit information desired of him, and his rights to credit for business should be clearly defined.

A formidable list—not all of which, fortunately, will usually be necessary. Some would feel that, in addition, instruction in the principles of salesmanship should also have a place. It is doubtful, however, if the subject could ever be treated with the same effectiveness in a sales manual as in any one of a number of good treatises on the subject which may be supplied to the salesman separately if desired. Some large organizations, of course, have been able to have textbooks or even complete courses in salesmanship prepared especially for them. Others might feel that a section on dress, appearance, voice culture, industry, courage and avoidance of bad habits should be included. Possibly so, but it may easily be overdone. Business would seem to be getting away from the too paternalistic and preachy stage. The high-class salesman resents it and, in most instances, reasonable care in these matters may be taken for granted. Furthermore, few star salesmen possess all the virtues and we are likely to be embarrassed by outstanding men who violate our righteous precepts.

Sources of Material. In every organization which has been running for any length of time, the material for the manual is in existence either in some written form or in the minds of the personnel. The problem is one of selection, organization, compilation, and putting the material into good literary style. The training methods of the organization, no matter how crude and irrespective of how little has been reduced to writing heretofore, will furnish the basis. It might be well, as a preliminary, to have stenographic reports taken of the talks given in training class. If the organization has published for any considerable time any type of publication for salesmen, it should be replete with valuable selling suggestions. The proceedings of general or sectional sales conventions and conferences should not be overlooked. The sales manager's letters to his men should be a prolific source of ideas. This material will be supplemented by information gathered directly from the salesmen in the field. They may be asked to contribute their best selling talks and most effective selling points, the methods they use in approaching and handling prospects, their reserve talks and methods of closing. They will be asked to state the objections they find most difficult to overcome. These objections may possibly then be grouped according to types of prospects and those salesmen most successful with each type asked to give their methods of handling these objections. Branch managers and sales trainers in the field will be called upon for contributions. Many of the portions having to do purely with the inside organization will be written by men in the several departments. Editing will be necessary here for balance and homogeneity of style.

Who Shall Write the Manual? Seldom will the sales manager have either the time or temperament to compile a sales manual. The man selected should combine some knowledge of and a keen interest in sales, should have something of a research type of mind, a keen reporting sense and a forceful, direct, and possibly dramatic writing style. If a man possessing this rather unusual combination of qualities can be found in the sales organization and brought to his task fresh from his field experience, so much the better. If a man is selected from the inside, it may be well to send him out for a period of selling experience, observing experienced salesmen work, preliminary to starting actual work on the manual. If a man is brought in from outside the organization, adequate time should be allowed him to study the organization on the inside and selling methods in the field before actual work of compilation is started; and every facility should be afforded him to gather information both from records and people.

Physical Form of a Manual. The manual need not necessarily be elaborate in form adequately to perform its functions. In a small organization, multigraphing or mimeographing serves the purpose. Readability, however, is important. Many organizations, most careful about the typography of literature going to their customers, feel that a sales manual may be printed in crowded, fine type. Adequate-sized type, proper headings, right length of line, and general attractive appearance will have much to do with the extent to which the sales manual is read and studied by the salesman.

The sales manual has been spoken of here as though it were necessarily included in one volume. That is not always so and is not at all desirable if

the material included in it bulks large. A salesman may be somewhat appalled by the prospect of having to wade through a three hundred page book, but digests the same material from a number of unostentatious, paper covered pamphlets without feeling it at all formidable. Furthermore, this form of several small manuals makes for greater elasticity, especially where parts of the manual must be studied by the recruit prior to his entrance upon actual employment or training. They are especially effective where training must be given in non-residence.

On the other hand, a loose-leaf manual, with the page numbering of each section starting from one, and each page bearing the name of the section as well as the page number, allows for frequent changes and additions. In most instances, however, this will be found more theoretically than practically desirable. A compromise is to put that portion of the manual subject to frequent change into loose-leaf form and the balance either into one permanently bound book or into several pamphlets. Inasmuch as the manual is to be studied by the salesman at home or in training class, no consideration need be given to making it pocket size. On the other hand, larger size makes for readability and the possibility of illustrations, where they are necessary.

General Observations. It is a mistake to believe that the selling portions of a sales manual can be written in an office. They are merely compiled there. They must reflect actual and practical field practice and experience. No pure theory should be advanced as anything but theory until it has had actual field test. No hobbies of particular managers or executives should be ridden. Methods of sales to be selected should be those fitted to a wide range of personalities. If the successful method of a star cannot be separated from this particular personality and reduced to terms of the average salesman or at least of a large number, omit it, no matter how reluctantly. It is better not to mention salesmen or even district managers by name in the sales manual. This is well enough in the sales bulletins and the sales manager's letters to his men but individuals have a habit of leaving an organization, not always pleasantly, or otherwise discrediting their methods in the eyes of the sales organization.

All suggestive sales talks, methods of approach, telephone talks, reserve talks, and closes should be put in direct quotes—from the viewpoint of the salesman actually talking to the prospect. It will be found that most salesmen are not particularly adept at interpreting indirect suggestions into direct quotations and statements. It should be given to them in exactly the form in which they are to use it with the prospect.

While the sales manual is in course of preparation, it should be sent to all salesmen in the field section by section, with the statement that in its final form, it will be their sales manual—not the manager's. They should be asked to read each section and to send in their comments, criticisms and suggestions for improvement, either noted on the copy or in a separate letter. The most important effects of this are that it insures the manual being read by the older men in the organization and prevents their criticising it later as theoretical or office made. They have had their opportunity to make it theirs before it was put in final form.

It can not be too strongly emphasized that the sales manual which would be effective is worthy of the care, consideration and cooperation of every execu-

tive and department head; and of the finest, most forceful writing, rich in human interest and dramatic appeal, procurable. That may seem over-emphasis but, because of the lack of those things, most sales manuals fail of maximum effectiveness.

It will be realized, of course, that in a sales organization employing branch manager, coaches or field trainers, or crew manager, separate manuals must be provided for them.

EXPENSE ACCOUNTS OF SALESMEN

BY WILLARD E. FREELAND, *Vice President, Freeland, Bates and Lawrence, Inc.*

Little standardization has appeared in the manner in which salesmen's expenses are reported, checked, analyzed, and controlled. The treatment of expenses by different companies is highly individual. By some companies, reporting and analyzing are carried out in great detail; by others, the problem is met by giving flat expense allowances based upon experience data.

A common trouble is to get expense reports filled out properly and sent in promptly. The process of constantly nagging the salesmen accomplishes little and may hurt the morale of the organization. So other steps and expedients have been sought to better the condition. One step is to make the reports more simple and more convenient to fill in and to carry. Another device is to combine various required reports in one sheet in coupon form so that the expense report, the daily activity report, requests for advertising and sales promotion help, etc., are combined in one sheet and come in together.

Current Practices and Methods. As marketing management moves toward a more scientific attack upon its problems and, particularly, as it begins to include cost accounting as one of its working tools, there is evidence of more detailed reporting and analysis of expenses. The items formerly lumped under sundries begin to appear in more specific forms and various expense standards make their appearance.

It is quite common to find in manuals of sales policies and standard procedures, or in house bulletins, schedules of maximum allowances for various major classes of expense items. Such standards as these are usually based upon experience. As more research is applied to the study of allowances, one notes that the maximum allowances are established for differing types of territory and for various sizes of towns.

Another practice becoming quite common is to make use of comparative analysis sheets of the expense items as a means for establishing better standards and for discovering the trends of various classes of expenses as one means for better control. In the larger sales organizations these comparisons are valuable for studying the expenses of the men within one division or sales district, the relative expenses of men in comparable types of territory, the totals or averages of expenses of groups such as sales districts, or the effect of better methods of sales operation such as planned routing, or selling to small towns or customers by making more use of the mail or the telephone in place of personal calls.

Use of the Flat Allowance. While there are no reliable figures available to warrant the statement that flat allowances for expenses are increasing in

favor and use, the increasing amount of published discussion of the question would indicate a wider adoption of fixed expense allowances. The flat allowance is usually upon a *per diem* basis but in some instances is upon a weekly or monthly basis.

The advocates of flat allowances claim that this method, which does away with expense reports thereby eliminating all the labor of checking and virtually all disputes, is fully as effective as any detailed reporting system and definitely adds to the morale of the sales force. Those opposed to flat allowances claim that under such a system the salesmen are inclined to live at cheaper hotels, buy cheaper meals, etc., in order to add to their own income from the fixed expense allowance and that this process eventually changes the perspective and weakens the selling ability of the man. The advocates reply that a man who would do this under the flat allowance system would and did cause the same trouble under the old arrangement.

Treatment of Certain Expense Items. Among the most troublesome of the expense problems is the item of *entertainment*. In the old days the item of entertainment was not large nor was it under suspicion as a step in the selling process, so today it is in the older industries and the older sales organizations that the entertainment item is most under fire because it is in those industries that it has become a great abuse. Legislatures and trade associations are working against the entertainment of the buyer as a dangerous form of commercial bribery. Many companies no longer have a place on their expense reports for entertainment and when a salesman does have to report an entertainment item, he has to make out a special report in great detail. It is interesting to note that in many cases not even the friendly cigar is able to find a place for itself on the expense report.

The item of *laundry* is another expense item which has not won general acceptance as an expense which the company should assume. It does appear among the legitimate expense items of many companies, based upon the belief that it pays to encourage the salesman to maintain a good appearance and that costs for laundry and pressing are returned by increased sales and goodwill.

The expenses for *sleeping and chair cars* present another expense problem. Most companies now cheerfully allow for lower berths and there is an increasing use of the section in the belief that more rest secured at night will pay dividends in sales the next day. There is more discrimination, however, about expenses for chairs. The majority of companies establish some factor of minimum distance before they will accept a charge for a chair.

So one might go down through the list of other expense items such as tips, taxis, requirement of receipted bills, and similar expenses and find no common agreement as to how they should be handled. Many companies issue rules governing such expenses. The only general observation that can be made is that where high-grade salesmen are employed these expenses are quite generally recognized and permitted; where low-grade salesmen are employed these items are usually much restricted.

Expense Cost Reduction Methods. One common practice is to assign a headquarters town to a salesman and to assume very little expense for the salesman while he is working in his home city.

A growing practice is to plan the routing for a salesman which has been found an effective method to reduce traveling expense and to increase the amount of time spent in actual solicitation of business.

Another method is to hold frequent, friendly conferences with each salesman to review the expense accounts. This process of education has been found to give good results.

Rigid scrutiny of expense items and continuous reporting to the salesman of errors and excesses is a very common practice in large sales organizations and in many cases has apparently been successful without arousing too much resentment. In many companies the salesmen are made aware that expense accounts are checked by the sales manager, the treasurer, auditor, or other official, and this method unquestionably has an effect in holding down the total expense.

Various graphical methods of presenting the salesman's expenses relative to those of other salesmen, particularly of those working in comparable territories, has been found effective without having to resort to much discussion or correspondence about specific items. Sometimes it has been found possible to establish a standard for the expense per dollar of sale for each salesman which they will accept as a fair standard and then show by graphical methods the variations from standard and the trend. This method is sometimes very effective.

Sometimes it pays to discuss with a salesman that the problem is not one of traveling expense solely; that the real problem is one of total cost for salary and expenses. It can be made plain to him that if expenses run high his opportunity for salary increase is reduced.

There are various methods by which the sales quota is made a part of the expense picture and a salesman has a chance to increase his bonus by keeping his expenses as low as possible. In some instances there is a specific bonus offered for reduction of expenses. This bonus is usually made payable at the end of the year.

Yet another method to check extravagance in expenses is to establish some method by which the salesman will automatically discover when his expenses are running out of line. One way to accomplish this is to have the salesman compute for each expense report sent in his average cost per call or his average cost per unit of sale or per dollar of sale. These computations can be made in the home or district office and furnished to the salesman but the effect is probably not so good as when he makes his own computations.

Expense Analysis. There is no end to the possibilities of method in the analysis of expenses. Very little work is required to carry on some analyses in which a sequence of averages over successive periods of time is determined in order to have a basis for fair comparisons and to ascertain definite trends. The averages computed monthly to ascertain the daily averages for total expense, for hotels, meals, transportation, and other classifications is worth while in any sales organization. It helps to remove the danger of commenting to a salesman about an expense item on a particular report while the manager is actuated by impulse or whim. Comparison with a standard might show that ordinarily the salesman kept this particular item under close control and the language of the comment made might be much tempered by the recognition that the item was an exception.

Automobile Expense. Here is a subject of great interest to most sales managers but one so complex and so little standardized that an entire book might well be devoted to its discussion. The larger automobile companies are able to give a great deal of specific information on the experience of sales organizations and the methods by which they analyze and control such expenses. Various research organizations have made studies of automobile expenses and expense control methods and these are available to those who wish to make an exhaustive study of the expense problem presented by the use of the automobile in sales work.

In actual practice the complexities of detailed reports of automobile expenses are largely overcome by the use of a flat allowance per mile or per day. In many instances there is a flat allowance for the usual running expenses and a flat monthly allowance in addition to cover the matter of depreciation.

There is no common practice with respect to whether the salesman or the company shall own the car. It is quite common to find both methods in use by a single company.

CONTRACTS WITH SALESMEN

BY WILLARD E. FREELAND, *Vice President, Freeland, Bates and Lawrence, Inc.*

Whether it is advisable to have a formal contract with a salesman is an open and, to some extent, a controversial question. There seems to be abundant evidence that the tendency is away from the formal contract. Even if it is not recognized by formal written evidence, however, it is true that a contract is entered into virtually every time a salesman is employed.

The most prevalent use of written contracts is in the field of the sale of office and store appliances and in this field some of the finest examples of the formal contract are to be found. It is also evident that the formal contract is found frequently in those businesses in which salesmen are paid on a straight commission basis, or where the written contract is an inheritance from the days when the commission form of payment prevailed.

Under certain conditions there seems to be a definite need for a formal contract. Typical of such conditions are the following instances: where the ultimate sales are on a contract or time-payment basis; where the protection of important patent rights is involved; where salesmen keep accounts or collect funds; or where the salesmen are hired by distributors.

It is not the written document which constitutes a contract. A contract is entered into whenever there is a "meeting of minds" in an agreement to attain a lawful objective and the agreement creates an obligation or a right. The agreement must be mutual and contain equivalent promises. An element of a contract is that the contracting parties must be legally competent, which means that they must be under no legal disqualification and must be of lawful age and of sound mind. Another element of a contract is that there must be some legal consideration which need not necessarily be money. In view of the number of contracts involving employment and services which

are constantly in the courts, it is advisable to have competent legal advice upon all contracts to make sure that they are legal in form and content and that the language of the document is so definite and clear that only the desired interpretation can be made in case of a future dispute.

Those who are opposed to the use of formal contracts point out in their arguments many disadvantages which seem to them inherent in a written, fixed contract. Much of the argument of the opposition centers around the inflexibility of the formal contract. They claim that it is impossible to foresee all the future conditions and stress the difficulties which arise when it becomes advisable to change basic policies and methods of sales operation.

Statements of Salesman's Duties. One of the first steps in the drawing of a contract is usually to give a promise of employment and to state clearly and concisely the duties which the employee undertakes to perform. Usually he is required to give his whole time to his work as representative of his employer and it has been found especially valuable to include a statement that he is to give his best efforts to advancing the interests and business of the employer. Often a point is made of stating that the salesman is to make every effort to obtain the distribution of the full line of the employer. Also, there is usually a statement that the salesman is not to carry any side lines.

In many cases it is necessary to give to the salesman confidential information and documents and a clause is inserted to safeguard the use of such information and documents and to provide for the return of all confidential documents and records upon request of employer or upon termination of the contract.

If the salesman is required to perform certain service, repair or inspection work in connection with his other duties, the scope and character of such work is defined carefully. If the salesman is required to make collections, this phase of his work is covered carefully and the time and manner in which he shall make remittances of money collected is set forth in detail.

If the salesman is required to use certain standard order or other forms of the employer, this should be covered in the contract. There should be no uncertainty as to the requirements for periodic reports or work done, expenses incurred, or any other required reports such as route sheets, statements of conditions in field or territory, credit reports or information, status of consigned goods, or condition of samples or selling equipment. With reference to samples or selling equipment it is usually advisable to cover all matters relating to damage, loss or insurance. Sometimes it is necessary to cover the item of fidelity bonds in detail.

Statements of Limitations and Restrictions. In most contracts it is essential to set forth the limitations and restrictions covering the conduct and activities of the employee for the protection of the employer. Where one finds these sections of a contract many and varied, it usually is caused by conditions peculiar to the business of the individual employer or because the salesmen are of relatively low grade and pay. Some of the protective sections are found quite generally in contracts because they operate to obviate future difficulties and disagreements. Some of the more common protective sections are discussed briefly below.

One of the clauses commonly found states that an order is not valid until it is approved and accepted by the employer. Another similar clause gives the employer the right to use his discretion about filling orders and often covers the matter of delays or partial deliveries.

The power of the salesman to bind the company is usually covered in definite detail, particularly so in the case of contracts with sales agents.

In many kinds of business it is wise to have a clause stating that the employee binds himself not to engage in the same kind of business for a definite period, usually a year. This is particularly the case where it is necessary for the salesman to have much confidential information about the business of the employer, or where it would be easy for one or more salesmen to engage in such business on limited capital.

In view of the fact that many a contract or agreement exists without being specifically recognized as such by the interested parties, it is common practice to insert a clause stating that the present contract cancels all former agreements. In many contracts are found clauses covering such items as vacations, illness, and absence from the assigned territory.

In many lines of industry or business the matter of "trade-ins"—equipment or appliances taken in exchange for new—is an important element and is defined and clarified in great detail.

It is sometimes essential to define carefully the rights of the employer to have special representatives or other salesmen work within the territory assigned to a salesman working on contract.

Numerous court decisions have made plain the necessity for the insertion in a contract of a section clearly defining when and in what manner a contract may be terminated. It is advisable also to cover such matters as the disposal of the employer's property in the possession of the salesman, the time and manner of settlement of any earned commissions, the question of deductions from any unpaid earnings, and any matters relating to bonuses, prizes etc.

An interesting and important development is the manner in which current manuals of house policies and decisions are being made a part of modern contracts with salesmen. Many of the opponents of formal contracts claim that a simple agreement covering employment and compensation and a signed receipt for a company manual will serve the interests of all parties as well as a written contract.

Statements Covering Territory. It is customary to assign a definite territory to a salesman. In these days of scientific research and analysis it is essential, however, that such assignments be so worded as to permit the greatest flexibility as to location and size of territories. In some types of business, too, it is essential to define or limit the kinds of trade or classes of customers and prospects to be called on or solicited.

It is customary to establish a home or headquarters city for the salesman, usually one relatively near the center of his territory. The employer assumes only limited, minor expenses of a salesman in his home town, but the matter of simplified routing and cutting of transportation expense is also important.

If the employer has established a quota system, all matters into which quota enters should be defined clearly in the contract. If all or a part of the

compensation is computed on a "point" system, this also should be described and defined adequately.

Statements Covering Compensation. The sections of a contract covering compensation are frequently the most difficult to write in clear and understandable language. This is particularly true when the method of compensation is complex, such as a combination of salary or drawing account, commission and bonus. Yet it is essential that definition and description be clear and concise and that, as far as possible, all future contingencies be foreseen and guarded against.

If payment is in the form of commissions, one section should set forth comprehensively all the rates and classes of commissions and the exceptions thereto. It also should describe the accounting periods for commissions and the form and time of payments.

A plain statement of salary is made easily but if a drawing account is involved, the description is usually not so simple. If the drawing account is not virtually a salary and it is expected that it shall be recovered from earned commissions, then it is essential that a statement be included that both parties consider the drawing account as a loan.

If a part of the compensation is expected to come from bonus earnings, then a most careful and detailed account of the bonus system should be written.

If it is proposed that deductions shall be made from earnings under certain given conditions, it is important that all possible phases of the matter be described in detail in the contract. The time and manner of such deductions should be made clear. Some of the usual causes for deductions are repayment of advances, cancellations of orders, return of goods, failure to collect for goods invoiced to customers, and loss of, or damage to, company property.

Another matter which frequently needs clarification is credit or commissions for mail orders from a salesman's territory.

A troublesome question in many sales organizations is the problem of "split" commissions where two or more salesmen are involved in a single sale, or where one salesman takes the order and one or more salesmen in other territories have some form of service work to do in connection therewith. The employer's decision should be stated clearly as final in such matters, but the morale of the organization usually is bettered if standards to cover such problems can be established and made a part of the contract.

If the matter of expense allowances and expense standards can be handled as a part of a company manual of policies and standard procedures, then the expense section of the contract can be made clear and concise by including the manual as a part of the contract and stating definitely that the manual is subject to constant revision and that any particular complaint or controversy shall be settled according to the rulings of the manual current at the time the situation arose. Otherwise the entire matter of expenses must be covered in detail in the body of the contract. Matters connected with the use by the salesman of his own or company automobiles for transportation in his work are usually set forth in adequate detail in a section separate from the other expense provisions.

Other Special Provisions. In some lines of business it has been found advisable to cover in the contract all matters relating to change of prices, terms of payment, and freedom of the salesman to quote special discounts.

In some contracts the precise form of cooperation which the salesman is expected to give to the credit, advertising, sales promotion, and other departments of the business is described in clear terms.

Occasionally there is found in a contract a provision setting forth the details for the renewal of the contract or the continuation of employment.

CHAPTER VIII

SALES PROMOTION

BY GEORGE W. HOPKINS, *Consulting Sales Executive*

"Sales promotion is organized effort applied to the selling job to secure the greatest effectiveness for advertising and for dealers' help." This falls into the following divisions:

1. Securing the most effective dealer use of sales promotion ideas and sales promotion material.
2. The application of advertising to the selling job.
3. Development of advertising material to be sent.
 - a. To dealers.
 - b. To customers for dealers.
4. Development of operating technique.
 - a. In the sales department.
 - b. At branch offices.
 - c. By the salesmen.

The object is to focus the attention of the consumer on the dealer's window and store, thereby getting full value from all advertising and publicity at the point of sale.

Some manufacturers object to the word "promotion" and call it the "sales development department" instead of "sales promotion department." The idea of development enlarges the scope of the department, indicates action, and dispenses with the word "promotion" with its less attractive meaning. Development gives the idea of a department taking off its coat to help the dealer build real volume of business at a profit. But in order to avoid any confusion, we shall use the name sales promotion.

Sales promotion is the connecting link between national advertising on one side and field selling on the other side. It is both a lubricant for smoothing the course of the salesmen's effort and a tonic for increasing the activity of salesmen and dealers in the sale of the product.

In case the business is not large enough to warrant a separate sales promotion department and there is no advertising manager, it is possible for the sales manager to act in this capacity, but he should keep the functions of this department separate and distinct from his sales managing duties. If this is done, as the business grows and an advertising manager is added, some of the work can be apportioned to him, the functions as a whole, however, being kept as a separate entity. Sometimes the sales promotion manager is

appointed to carry on in the field without the support of periodical or newspaper advertising or of an advertising manager. There are many phases of advertising that can be handled by a sales promotion manager, the use of which would not warrant an advertising manager. If three are possible, the general sales manager, the advertising manager, and the sales promotion manager make an ideal sales cabinet and with the functions of each department carefully outlined, there is no crossing of wires, each supplementing the work of the other and through frequent consultation, setting the sales policy.

There are thus three possible set-ups: (1) a sales manager also carrying on the functions of a sales promotion department and an advertising department; (2) a sales manager functioning with a sales promotion manager and taking on the duties of an advertising manager in so far as the business warrants; (3) a sales manager, a sales promotion manager, and an advertising manager. Each department in each case develops in accordance with the kind of business and the volume. It is wise to keep the sales promotion department separate and distinct from the sales and advertising activity, whether it is incorporated in the duties of some official or separated and under its own manager.

The man in charge of the sales promotion department should be a man of imagination, a man who can place himself in the shoes of the dealer, realizes his problems and, while selling him more merchandise, at the same time shows him how to sell at a profit to himself. Such a manager should be a field man in order that he may keep in personal contact at all times with the requirements of the trade. First, he goes out to see what the dealer wants and what he can use to the best advantage. Second, after preparing the window material or store material, he goes back over the same route to see how it is used and what returns it is bringing to the dealer.

It is best to select certain sections as *proving grounds* where a small part of the money to be devoted to this work can be invested and tried out, getting a fair cross section opinion of how the dealer will respond to the material and what results it will bring to him. In other words, instead of spending the full appropriation for a beautiful window trim covering the entire country, buy a small quantity even at a higher price, try it out with a fairly representative group of stores, check them carefully, and then decide whether to go ahead or make some changes. After a try-out of this kind, the sales promotion manager feels positive when he writes the dealer about such display that it will work in his store and why. It is necessary to get personal knowledge and not knowledge that comes through salesmen. A salesman is sometimes too enthusiastic about the amount a dealer can use so long as it does not cost any money, whereas there are some stores where a display will not fit at all and is entirely wasted.

If the sales manager or the advertising manager are doing this work, they must step out of their positions in order to get the viewpoint of the sales promotion manager and his duties. The work is primarily helping the dealer to dispose of merchandise the salesman has sold him. The dealer looks from one side of the counter while the sales manager looks from the other side. It is difficult to see it from both sides and as soon as it is possible, a man should be appointed to take over the sales promotion work.

Mergers in various lines of industry have changed the value of sales positions. Some of these mergers have wiped out competition and with it salesmen, sales managers, advertising managers, and sales promotion managers. These positions have been consolidated in fewer men and, in most cases, in men of higher caliber. Sales promotion has been developed to mean more than it ever did before and the man responsible for sales promotion may have the title of president, vice president, assistant to the president, general sales manager, or sales promotion manager. This does not mean in any case that all of the ideas come from one man, but the man who is responsible for sales promotion has the duty of producing new ideas, must have a vision as to the possibilities of the business, and must be able to put his thoughts into profitable operation. Details of the job may be handled by men and women in the organization, but in every business you will find one man who stands head and shoulders over any one else in the organization in his ability to promote sales at a profit.

What Does a Sales Promotion Manager Do? There follows a tabulation of activities in which every sales promotion manager should be interested. The fact that the sales promotion manager is not a separate entity does not affect this at all. We are outlining the functions of the job regardless of who fills it:

1. Package.
 - a. Form of the package.
 - b. The price.
 - c. The label.
 - d. The carton.
 - e. The insert.
 - f. The counter display carton.
 - g. Method of packing consumer assortment.
 - h. Christmas or holiday package.
 - i. The shipping carton.
2. Service to salesmen.
 - a. Survey.
 - b. Research.
 - c. Sales manual
 - d. Advertising portfolio.
 - e. Paving way for salesmen's calls.
 - f. Writing dealers missed by salesmen.
 - g. Maintaining contact with dealers.
 - h. Letters of welcome to new dealers.
 - i. Handling complaints from dealers.
 - j. Contests.
3. Service to dealers.
 - a. Broadside to dealers.
Order blank.
Return envelopes.
Stamped return envelopes.
 - b. Double post card.
 - c. House organ for dealers.
 - d. Special mail campaign.
 - e. Dealers' meetings.

4. Propositions to dealers.
 - a. Dealer service book.
 - b. Free deals.
 - c. Assortments.
 - d. Window display plan.
 - e. Demonstrating plan.
 - f. Booklet plan.
 - g. Sales plan.
 - h. Special price sale.
 - i. Special price item.
 - j. Standard sales talk.
5. Display.
 - a. Window displays.
 - b. Snipes.
 - c. News posters.
 - d. Giant advertisements.
 - e. Enlargement of advertisement with broadside.
 - f. Store arrangement.
 - g. Counter display fixture.
 - h. Store display fixture.
 - i. Monthly dealer service.
6. Things to do for the dealer.
 - a. Demonstration.
 - By salesman.
 - By temporary demonstrator.
 - By permanent demonstrator.
 - b. Door to door canvassing for the dealer.
 - c. Samples.
 - Free given away by dealer.
 - Free delivered door to door.
 - Free through advertisements.
 - Free through mail from manufacturer.
 - Charged for through advertising.
 - Charged for by dealer.
 - d. Full size package free through dealer.
 - e. Movie tie-up.
 - f. Combination sale of product and allied items.
 - g. Advertising inquiries sent to dealers.
 - h. Letters to consumers over dealer's name.
 - i. Broadside to consumers over dealer's name.
 - j. Missionary sales for dealer.
 - No charge to dealer.
 - Specific charge for the sale.
 - Blanket deduction from discount.
 - k. Prize contests for windows.
 - l. Prize contests for clerks.
 - m. Prize contests for consumers.
 - n. Premiums to clerks.
 - o. Training dealer's clerks.
 - p. School for dealer's clerks.
7. For dealer use.
 - a. Dealers' survey.
 - b. Newspaper cut and copy service.
 - c. Catalogues for dealers' distribution.

- d. Envelope insertions for dealers' distribution.
- e. Booklets for dealers' distribution.
- f. Special price coupon for dealers' distribution.
- 8. Publicity.
 - a. Movie slides and films.
 - b. Metal signs.
 - c. Canvas banners.
 - d. Decalcomanias.
 - e. Store cards.
 - f. Business shows.
 - g. Calendars.
 - h. Fans.
 - i. Blotters.
 - j. Novelties.
 - k. Trade papers.

The Package. In referring to the package we mean the unit offered to the trade. It does not necessarily mean that goods are delivered to the consumer in a package, although in these days most goods that enter the market through jobbers and dealers are offered to the consumer in some kind of package. If it is to appear on the counters of the dealer, than the sales promotion department is vitally interested in its size, its shape, its general appearance, its competitive standing, and in many other ways, for it is largely through the eye that the consuming public makes its purchases. What the merchant may say to the consumer does not create nearly the impression that the appearance of the package makes on the prospective buyer.

The sales promotion department must ascertain through surveys, research and contact with the dealer and factory conditions, what kind of package should be offered the trade.

Form of the Package. This will depend on how the package is offered to the consuming public. If it warrants counter display, shelf display, or window display much care should be taken that the form of the package is as attractive as possible. If it is an article that appears in the home in its original form, particularly if it is a food product and served on the table in its original package, utility should be added to pleasing appearance. Convenience of access to the product should also be considered. In the case of a new vinegar that has come on the market, the three sizes of home containers are beautifully shaped, attractive, and convenient, the smallest size being in the cruet form so that it can be placed on the table and the vinegar served therefrom.

In the cosmetic and toilet goods field it is of greater importance than in any of the other industries that the package should be artistic in appearance.

How convenience, use, utility, and good appearance may be secured will be determined only after a careful survey of the market, particularly before any radical change is made. An intimate knowledge of home as well as of store conditions is necessary before tackling this problem.

The Price. Profit to the manufacturer and to the jobber and dealer is the first consideration in pricing the product. There are, however, "price channels" for every line of merchandise and to step out of these channels even at a lower price will disconcert the buying public to the extent that they will hesitate before purchasing. A careful study should be made of

price channels in the industry before fixing a price on a new product, particularly if this price is a suggestion as to what the dealer should charge.

A manufacturer was offering a high-grade product at 23 cents a pound but was unable to interest high-grade stores. An examination of the product proved that at 23 cents he was in the price range of competition with low-grade products and lost the benefit of the quality of his product. When he raised the price to 45 cents, he entered a field where his product was equal in every way to the competition and immediately he was able to open the high-grade accounts. He continued successfully selling through these stores to the public. In the first place, no survey of the market was made or the situation would have been discovered. By no means is it always the lowest price that wins business. It is well to remember the saying, "Price determines quality." Price is the only measure of quality for most people. Many persons can not detect the quality of fabrics, foods, or hardware, and most of the buying public reason that the higher price means the better quality.

A product that is to retail for a price under \$1 usually falls within the one coin price, that is, 5, 10, 25, or 50 cents. Many times a product will sell better at 25 cents than at 20 cents, for the reason that the purchaser passes out one coin at 25 cents whereas in 20 cents it is two coins or more. Custom has established the one-coin price under \$1.

The Label. The appeal of color is primitive, especially that of the primary colors. Color in the package appeals to the window dresser and the product goes into the window because it fits into some color scheme, is brilliant enough to attract in itself, or because of its beauty.

Uneeda Biscuit on the counter or shelf will often be packed with the red end label showing, because of the lack of color in the main package. Sunshine Soda Crackers, on the other hand, will be in continuous display on shelves, counters, and windows because of the brilliant red label. In its early days Shredded Wheat was in a nondescript, colorless-looking package. Then the sales promotion department evidently realized that they were getting no display. They began to use color, first in the strawberries on the carton, and from a back-shelf position the package gradually came to the front and is often seen in prominent display.

Color attracts the customer's eye and it is estimated that 75 per cent of buying is done through the eye. It also has its advantages in advertising, for a colorful package can be reproduced in the color section of a magazine exactly as it appears in the store, making the "hook-up" a strong one. Children are attracted by color and any package that is bought by children should have brilliant coloring, preferably the primary colors such as red and yellow. Green is a color to avoid on food products. It does not seem to appeal to the buying public. This applies especially to the packaging of confectionery.

The Carton. Considerations of economy are increasing the use of the carton as rapidly as it is developed for new possibilities. Milk is now being sold in cartons. Oysters are delivered in cartons. Biscuits in bulk are sold to the dealer in cartons instead of tin cans. As the carton becomes thoroughly waterproof, without doubt other merchandise will make its appearance in this kind of package because of the economy.

Sales promotion departments will do well to keep in continuous touch with progress in carton making which has gone far since the first introduction of the moisture and dust proof package.

The Insert. This is a form of advertising that is often neglected, and yet it is an opportunity for the manufacturer to shake hands with the consumer at the time when the product has passed into the consumer's possession. A word of explanation or commendation at this time often increases the satisfaction of the purchaser.

Such inserts can give recipes, instructions, a sales story regarding the product, testimonials from satisfied users, tests that may have been made by laboratories, colleges, or other organizations, construction features peculiar to the product, or questions and answers regarding the contents.

Loose Wiles Biscuit Company some time ago placed in each package of biscuit a paper doll, each package carrying a different kind of dress for the doll up to twelve in number, so that the owner of a doll by buying packages of Sunshine Biscuit could obtain a wardrobe of twelve different dresses. The company advertising informed the public that the doll and the dresses were in the packages and, of course, many children insisted on continuous buying, at least until they had obtained the complete wardrobe for the doll.

The Counter-display Carton. There was a time when the carton in which packages were delivered to the dealer was thrown away when the packages were placed on the shelf. Now the carton often becomes a counter-display fixture for the product, making it possible for the dealer to show the contents to the best advantage.

Many cartons have been patented in the last few years, notably those for Life Savers, chewing gum, toilet articles, Cannon towels, and many kinds of novelties.

Many of these counter display cartons are in brilliant colors and call attention to an article which otherwise would be lost among the multitude of items in the average store. The number of packages in the carton is usually a dozen and in many cases this prevents orders for "broken dozens" where the dealer is buying "from hand to mouth." Where the product is too large for counter display, a great deal of ingenuity has been put into its preparation for floor display.

This form of display offers an opportunity for the manufacturer to print on the back of the carton as it is set up a story in regard to the product offered for sale which can be read by the clerk serving the customer and used as a sales talk to the customer. The message should be printed so that it comes natural eye height to the clerk as the product is set up on the counter of the dealer.

Method of Packing Consumer Assortment. The sales promotion department very quickly becomes acquainted with the right kind of assortment. An assortment can be made attractive to a customer, as is evidenced by Whitman's Sampler of chocolates, the colors in a box of handkerchiefs, the size in a box of hooks and eyes, the colors in a make-up box, the surprise assortment of biscuits, and the package of Pinaud's lotions and toilet waters.

Such assortments must be worked out with a full knowledge of conditions in the trade, otherwise they may block sales and create dissatisfaction on

the part of customers. It is well to try out an assortment in a small way, taking a cross section of territory so that a fair test as to the wishes of the public can be obtained, before it is finally adopted.

Christmas or Holiday Packages. Formerly the box of candy or the box of stationery was the only thing that carried a holiday atmosphere. At the present time almost every package that goes direct to the consumer has been given a Christmas appeal through the decoration of the container or through advertising. In some cases this appeal has been inappropriately used but in other cases it has brought utility presents into style as holiday gifts to the advantage of the receiver. This is sometimes done to advantage through showing the use of the product under holiday conditions.

The Shipping Carton. The shipping carton should contain the number of packages that a dealer can purchase to advantage. It may be one dozen, two dozen, four dozen, even six dozen. This number should be ascertained by a study of conditions because a correct understanding of the needs of the market will avert the orders for broken packages which are made when the amount is not acceptable to the dealer.

The shipping carton, traveling by express or freight, standing on the sidewalk outside of the dealer's store, or even thrown on the dump, gives an opportunity to tell the story of the product it contained and advertise its use to the consumer. This space would be valuable if offered by an advertising company as poster advertising. It is available to the manufacturer at the cost of printing; notwithstanding this fact many cartons go into the trade blank on two or more sides.

The story can be short or long depending on the product; it can be varied as new cartons are made; it can show the product in use. The same advertiser who changes his copy on billboards and in street cars every thirty days entirely neglects the six sides of the shipping carton or runs the same copy year after year.

Service to Salesmen. It is in this phase of the work of a sales promotion department that its greatest opportunity is presented. The sales promotion manager stands between the sales manager and the advertising manager, interpreting for the benefit of the dealers the advertising offered by the advertising department and the sales plans presented by the sales department.

The sales promotion department should not try to teach the salesman how to do his work but should help him to get more business from the dealer. It is wise to consult freely with the salesmen as to conditions in the field, especially in the case of individual customers where there is trouble in getting the volume that is expected. On the other hand, the salesman can not stay in the dealer's store long enough to get all the information desired and surveys made by the sales promotion department, analyzed and given to him on specific accounts, will prove invaluable.

Market Survey. "A market survey is a positive study of potential consumption, competition, sales territory, sales methods, and advertising."

Whether this survey is secured from an organization specializing in the work, or made by the manufacturer's own organization, it should not be made by the salesmen who are responsible for the business and can not take an objective view point. If the survey is made by the sales promotion depart-

ment, it should not only include conditions in the field, but should study the books of the company. An analysis of the accounts with dealers will bring to the attention of the sales executive any violation or wrong emphasis of sales policy.

Research. A survey is of conditions as they exist at the time the survey is made, whereas research covers past, present, and future. Research defines the objective and manufacturers now realize the importance of careful research before offering anything new to the public. The old fashioned way was to manufacture a product, then turn it over to the sales department and tell them to sell it. This caused many slow moving articles to accumulate in the inventory because the manufacturer did not first find out what the consumer wanted.

Research has become practically a separate business. It is possible to conduct it under the direction of a sales promotion department, although an organization that will "let the chips fall where they may" usually can secure a clearer insight into the needs of the market.

Sales plans should also be created to fit conditions as they exist in the field, as shown by careful survey and research.

Sales Manual. The sales manual properly prepared is one of the greatest helps to the sales manager and salesmen that can be prepared. The method of building a sales manual has been described in the preceding chapter.

Sometimes a part of the sales manual and sometimes in separate form is a book setting forth the sales policies of the house. This "policy book" is divided so that matters which concern only the department heads are not included for the salesmen. This is best secured by the use of separate numbered bulletins. These can be taken out of the book or added and receipts can be returned by those who receive them so that the executive may know that each person has the information at hand. Such a book carefully prepared prevents arguments and secures clear understanding of the policies.

Another valuable aid to the salesman is the "sales idea digest" in which the best retailing ideas of dealers in all sales territories have been recorded from time to time as they are discovered by the salesmen. A "sales idea digest" in the hands of a salesman enables him to solve many problems that come to his attention and he finally gets the reputation with his dealers of being able to make a suggestion as to how they can improve their business under any conditions that may exist. A prize offered to dealers for ideas as to how best to sell the product will bring in good information for the sales department. The ideas for the digest should be simple in operation and positive in result, and should be recommended only when the conditions are the same as those under which the idea originated.

Advertising Portfolio. The material for the advertising portfolio is the product of the advertising department, but the sales promotion department can take over its preparation in the form and size best adapted to the salesman's use.

In the introduction of an advertising program the advertising portfolio is an important aid. It can be used together with samples, the sales talk of the salesmen and the preparation of supplementary dealer's service material so as to get the greatest possible value out of the advertising. Coordination

of the advertising with the sales program is a duty of the sales promotion department.

Pave Way for Salesman's Call. Advance cards vary according to the ideas of the salesman or of the sales promotion department. Some are dignified announcements, others use a cartoon that brings a smile, some show the salesman's photograph as a reminder. Such cards are sent to make an appointment or to suggest that the order be held until the salesman arrives on such and such a date.

This does not mean that a salesman will expect a dealer to hold back an order to his own house when the dealer needs the product. Arrangements are usually made for such orders to go through direct to the house, and credit to be given the salesman.

Where there is a reason for writing to the dealer that a salesman is on the way, such as to tell him of special bargains that the salesman will call to his attention on arrival, the double value is secured of notifying the dealer of the call and of making sure that the dealer knows of the special bargain. General information which is in the form of news of interest to the dealer can be included in such letter.

If it is known that the dealer has a complaint, it is a good plan for the letter to attempt to meet the difficulty so that the way will be open for the salesman to take up the subject on his arrival. This shows the desire of the sales organization to satisfy the dealer where it is possible.

The sales promotion department may have discovered a prospect on whom the salesman has never called. In this case the letter will be more explicit and outline in a direct way what the dealer can expect from the salesman when he calls. Help of this kind is always acceptable to the salesman. All salesmen dislike what is known as "cold-turkey canvass," that is, to approach a dealer without any introduction or previous call and attempt to get an order.

Writing to Dealers Missed by Salesmen. A dealer is complimented when he receives a letter from the house apologizing because the salesman was not able to visit him on his last trip.

The reason for skipping or missing a dealer should be given by the salesman and should be a valid reason, otherwise no letter should be written. If the letter is written it should include the story that would have been presented by the salesman to the dealer, particularly if it is a special sales proposition. After the salesman has seen the results from some of these letters, he will be very glad to supply the information that will give the letter a personal touch.

In every case a copy of such a letter should be mailed immediately to the salesman that he may know exactly what to take up when he calls on that dealer the next time.

Maintaining Contact with Dealers. Any constructive letter written to a dealer for a legitimate reason is helpful. Often a news item taken from a paper or magazine will give an excuse for writing a dealer. On a tip given by the salesman as to the size of the previous order a letter can be written calling attention to the necessity of keeping up stock and directly asking for an order. This would apply particularly where a line is fast moving and the

previous order has been small. Where the dealer did not buy, a good sales talk sent to him soon after the salesman has left the territory is sometimes helpful. It does not pay to carry on solicitation of this kind indefinitely and it should stop when a specific reason for the letter is lacking.

In these days of small-order buying, frequent contact with the dealer is necessary. The telephone, sometimes the telegraph, many times the catalogue, or a letter with a good sales talk will keep the line active in the dealer's store.

A salesman sometimes thinks that an item has gone out of style or has been superseded by a new product and forgets that there are dealers who have trade for the items longer than others. By watching each dealer's card the sales promotion department can detect such a customer and write a letter calling attention to the items that are older and perhaps forgotten by the salesman, and can thus maintain enough of a demand to reduce the factory inventory materially.

Letters of Welcome to New Dealers. When the president of the American Telephone and Telegraph Company takes the time to sign letters of welcome to new stockholders added to their list and letters of regret to stockholders who have been taken off their list, it seems reasonable to think that it would profit a business organization of almost any size to welcome a new dealer into the organization. A new dealer likes to feel that he has made contact with the house other than through the salesman. He likes to feel that he is a factor in the manufacturer's business and a letter from headquarters thanking him for an order and including in the letter some specific reference to the order, or to the conditions under which it was taken, is a personal message of value.

Handling Complaints from Dealers. All complaints should be answered carefully. No complaint is too small to receive the attention of the home office. Over a period of time the department will accumulate the best answers to dealers' complaints. In other words, complaints repeat themselves and the sales promotion department can maintain a book of best answers, used by correspondents in answering such letters. These answers should not be used in such a way as to give the appearance of a form letter. Humor should be avoided in these letters. There is danger that when the letter is received the recipient may not be in a frame of mind to appreciate the humor and it will then antagonize him.

Contests. James Maratta says of sales contests:

The trouble today is not with sales contests but rather with inexperienced sales managers and other executives who plunge an organization into a contest for no particular purpose and with no end in sight other than to pass out prizes. The value of prizes has nothing to do with the success or failure of a sales contest, for it is a proved fact that men will risk limb and life for the honor of leadership and snap their fingers at an increase in remuneration for a common service. Contests are the life blood of a wide-awake sales organization and, when planned with the painstaking detail given to merchandise and advertising programs, will result in immediate increase in business.

It is true that there is usually a reaction from a drive for sales, but there must be a drop in the curve after any peak in sales. The important factors

are the choice of a contest which fits the particular case, and a fair trial with good support. John M. Kumler has given some fundamentals for sales contests from which we quote:

1. If merchandise prizes are used, preference should be given to standard, nationally known, and wanted goods.

2. The best prize combination is a cash grand prize and attractive merchandise awards for all.

3. A prize given with each unit sold is not so effective as a larger prize achieved by the sale of a number of units.

4. A contest that appeals to the strong salesmen only is not worth while.

5. The contestants should select their own prizes. This is made possible by offering a large variety of prizes.

6. Bulletins and letters should be as personal as possible. Men respond more quickly to the encouragement and the personality of the sales manager than to general material that is not definitely connected with the plan.

7. The rules of the contest once formulated must not be changed for any individual salesman.

8. A personal message to the salesman's family at the beginning of the contest enlists their sympathy and influence.

9. If a contest is used for jobbers and wholesalers, it is best to confine it to the salesmen of such houses.

10. Acknowledgement and thanks should be given to a prize winner in addition to the prize.

11. There should be as little delay as possible in giving the awards.

12. It is unwise to start a contest just to be doing something. A real purpose is essential.

13. Some successful contests have been run without prizes.

14. A sales contest should be run to get sales—not for the purpose of determining the best salesman.

15. A sales contest that appeals only to individuals will never achieve as great results as one which appeals to groups.

16. A sales contest is fundamentally unsound if it offers opportunity for the contestant to quit at any time. It should be so constructed as practically to force the contestants to continue to the end.

17. While rewards for new business through new accounts should be larger and of more value because of future possibilities, no contest should be run in which the contestants are so eager for new accounts that they neglect old customers.

18. In staging a contest consideration must be given the fact that a certain amount of business would normally result during this period providing no contest was held. Therefore, additional costs for business resulting from a contest must be borne by the new or additional business secured.

19. A dealers' contest should be supplemented by direct mail matter in such a way that new prospects may be discovered and turned over to the salesmen.

Some of the reasons why sales contests have been carried on are:

1. To acquaint the men with one another as the members of departments within the organization are acquainted with their fellows.

2. To provide a healthy spirit of rivalry among scattered men, something like the rivalry which may exist between skilled workmen in the factory.

3. To stimulate sales in a dull period of the year.

4. To put additional emphasis on certain objectives in selling, for example, through prizes for the greatest number of new customers, or greatest excess over a predetermined quota.

5. To show the majority of the men what can be done and is being done by the most effective salesmen on the force.

6. To provide for a drive to introduce new items that have been added to the line.

7. To provide interesting printed material which will serve to keep the house in regular contact with the men on the road.

8. To provide that the names and achievements of salesmen are put in a form which the executives see regularly, thus insuring recognition from the house as well as from the sales manager.

9. To replace artificial "pep" messages with something more substantial in the way of recognition for good work.

10. Sometimes to get friend wife into the picture—where a salesman's house organ is mailed to his house and she sees it and discovers that her man is either a hero or should be urged to become one.

11. To stimulate a whole branch office that may be lagging.

12. To show the "stars" that the young fellows are coming along fast.

13. To make new acquisitions to the sales force properly modest by keeping constantly before them the achievements of the high men.

There are many kinds of contests. We shall mention a few to give an idea of the possibilities. The lobster-and-bean contest explains itself. It is on a team basis, one matched against the other, both teams sitting down to dinner together at the close of the contest, the winners eating lobster and the losers eating baked beans. The automobile race is a contest in which progress in sales is represented and dramatized by toy automobiles advancing across a big map in the office. This map is reproduced by photographs which are forwarded to the sales force showing the positions of the racers each day.

A satisfactory contest, and one that usually produces the maximum of effort, is one where the wife, sweetheart, or mother is the "sales manager" of the individual salesman. All information goes to the lady. All of the prizes are such as will appeal to her and are given to her if her salesman wins. A contest that is usually pleasing to the organization is the vacation club contest where the prizes are a week's vacation, such as a week's vacation and a complete outfit of wearing apparel and all expenses paid; an aeroplane trip to Atlantic City; a steamer trip to Virginia Beach; an ocean cruise to Boston. These trips can be made as short or as long, as cheap or expensive as the contest warrants.

The president's birthday or the president's return from a vacation or the anniversary of the founding of the business will furnish sufficient occasion for a contest which can be made for prizes or for the pleasure of doing something for the good of the business. Often the best prize is a list of the winners framed and placed in the president's office.

The thermometer contest where the temperature goes up or down in accordance with sales can be made spectacular and interesting.

The General Electric Company put on a circus contest which increased the sales of the electric refrigeration department 30 per cent. It was for a \$20,000,000 quota established for the period between Oct. 1 and Dec. 9. Prior to the campaign men with some knowledge of circus activities were dispatched to visit the leading circuses. They interviewed outstanding stars and con-

sulted with circus executives, they spent considerable time in watching all the activities from the time a circus arrives in town during the gray hours of early morning until its trains are loaded to start on the way to the next town. All this was done to get authoritative material that would provide spectacular sales parallels and general data for the promotion of the sales contest. The layout men, copy men, convention plan men, and others were required to gather first-hand material by visiting the circuses and in some cases by actually living with the circuses. Therefore, when the campaign was launched with all its color, brilliance, and glamour it is small wonder that over 17,000 registrations were received from salesmen as compared with the 10,000 of the previous year in a similar sales contest. A different letterhead had been prepared for each mailing in the campaign. One of the things most essential to the success of a campaign such as this is variety, distinctiveness, and attractiveness in the letterheads used for the messages prepared. The promoters of this campaign are quoted as saying,

In the light of the campaign success we consider it highly desirable to select an unusual theme and promote it in the most colorful and impressive manner when there is need for stimulating sales at a time when business is hard to get.

A contest that arouses a great deal of interest is a Stock Market contest. The phraseology is readily adaptable and every salesman gets a thrill as he watches his stock rise or fall to new highs and lows, each time the tickers tick. The National Lamp Works of the General Electric Company tried this contest very successfully. This was for the development of business rather than the obtaining of new accounts. The result was "nearly \$500,000 increase in sales of 3,730 retail agents over 9,000,000 square feet of factory, store, and office space relighted to a modern standard." Each jobber salesman was asked to select at least five and not more than fifteen of his most promising agents to serve as his "common stock" during the period of the contest. On these agents he was to concentrate during the six months period to help them show an increase in lamp sales as compared to their records for a similar period the preceding year. The combined six-months sales of his group of selected agents was termed the par value of the salesman's "stock" and served as his quota. This was recorded by the month and as sales were reported month by month during the contest, his stock quotation was published in the score called "the ticker." It was supported by the use of stock certificates and all of the language of the Street.

The Frigidaire and Addressograph companies have also worked the Stock Market contest most successfully. The quotation board in the case of the Frigidaire Company was set up in each district office and a ticker tape on which quotations were typed in regular approved form. The market reports and letters to the salesmen were all in the language of the stock market. In the case of the Addressograph Company, the only ticker used was a clock which was referred to as being "the only ticker that counts in big dividend contests."

There are other special sales plans which do not use the contest idea, such as selling a ton of a product. This was successfully operated by the Sunshine Biscuit Company by selling the dealer a ton of biscuits which he was to sell

within a period of one week. It was supported by a parade through the town, window displays, and advertising. Another sales plan is the "carload" plan, A carload of the product is to be sold by the dealer in a week's time. "Sales weeks," which are operated by many companies involve concentration on a product for a week together with the use of types of publicity and advertising.

As a rule a contest or a big sale arouses the interest of the dealers. They like to get into the game with the salesmen and often will increase their orders where it helps a salesman to win a prize.

Service to Dealers. The service to dealers by a manufacturer through the sales promotion department is usually by means of direct mail. From an article written by T. W. Combs, Sr., we have selected the following checking points for the use of direct mail:

1. Was the idea of sufficient interest and value to justify its development into a direct mail message?
2. Did the copy clearly and completely explain the benefit your proposition offered the reader?
3. Was the message written in words that you or your salesmen or the dealer or the dealer's clerk could use easily in conversation?
4. Were all of the sales points in the opening paragraph with the result that no one of them was clearly expressed?
5. Was the entire history of the business, of the product and of its accomplishments given in one letter?
6. Was the message clear cut, fact giving, unmistakable in its meaning?
7. Was the copy read aloud to some disinterested person so that there would be a chance to correct any wording that gave a wrong impression?
8. Was there anything in the message that could be disputed, that might invite controversy or argument, anything that would have to be defended or excused?
9. Was an attempt made to copy someone else's style in writing the story?
10. Was the story all about "our product and us" instead of "you and your interest?"
11. If the copy was intended to persuade people to go somewhere and buy something, did it tell them where and how to get it?
12. What basis was there for thinking that the copy was satisfactory?
13. Was the attempt to please the readers to whom the mailing piece was addressed or was it to suit one or more of the executives?
14. Was the mailing piece sufficiently illustrated with new drawings or was money saved by the use of old drawings that were "good enough"?
15. Were the illustrations so surrounded by type matter that it was like looking over the heads of a crowd in the effort to see them, or did they have the proper setting in plenty of surrounding white space?
16. In the direct mail furnished the dealer or jobbers for them to distribute, particularly envelopes, inserts or stuffers, is everything sacrificed for low cost? Does the copy which is supposed to be serving their interests mention their names only with an imprint that is hardly noticeable? If so, that is probably the reason why they do not use the material.

One of the most important things in service to dealers is that the mailing list should be active. It should be checked and rechecked continuously in order to be sure that it is up to date. Where the lists are bought from firms

that offer them for sale, care should be taken that they are purchased from a reliable source. In case tax lists, auto registration lists, lists of property owners, telephone lists, etc., may be used, the sales promotion department can secure these for itself.

In any use of direct mail methods it is well to remember that nothing will get the support of the salesman for the sales promotion department more completely than the knowledge that whatever business comes from his territory by mail will be credited to him and that he will receive the commission thereon.

Broadsides to Dealers. The broadside is usually the introduction of an advertising campaign or special sale. The size gives them the name of broadside. They are used to attract the dealer's attention in the hope that a quick order will be placed. To make this easy, ingenious devices for inserting the order blank, return envelope and sometimes stamped return envelopes are enclosed. The return envelopes on which the postage is paid on their receipt, are now used to good advantage. Broadsides are usually well filled with pictures of the product in action or use.

Double Post Card. The double post card is used many times as a reminder of a product the dealer may have forgotten on his previous order, an assortment of particular value, or a sale at a special price. Some firms keep careful check on the orders and know about the length of time within which the product should be sold. When the supply is supposed to be low, a double post card is sent to the dealer reminding him to stock up.

House Organ for Dealers. One of the values of the house organ to dealers is that it makes the dealer feel that he has registered with the house as a customer and that he does not exist simply in the mind of the salesman.

The house organ to dealers has great possibilities, but its value is often sacrificed through lack of understanding on the part of the sales promotion department as to the material that should be included. It is not a place to put the pictures of all the officers of the organization, of the factories, and branch houses, and to talk continuously about the product and how wonderfully it is manufactured. The dealer who receives the house organ wants to read what the company has to offer for his benefit, how he is going to sell more of the product at a profit, how to interest his customers in buying more, and what other dealers are doing in various parts of the country.

Pictures of the product in action or in use, which will give him new ideas as to how to present it; arrangements of stores windows, or delivery trucks; in fact, anything that has to do with his own store is of interest to him. If there is something special to offer it should be presented in such a way as to get his interest not in *buying the product* but in *selling at a profit*. Current news from dealers in all parts of the field, local information of interest, photographs of stores with names and addresses, some testimonials when they are true—all these are worth using.

It is possible for the company itself to print a satisfactory house organ. In other cases, men that specialize in this work put together the material, which often includes research information of benefit to the dealer. It has been found best not to use humor except in the form of cartoons and these must be so drawn as not in any way to ridicule the product or the seller. Color

may be used to advantage. The copy should be written in the language of the dealer, not of the factory or the office. The person who writes it should be in close contact with the dealer, with his method of selling, and his problems.

It is better to have a house organ of four pages which really says something than of sixteen pages with material very evidently supplied to fill the space.

At times a special edition of the house organ can be sent the consumer to advantage. In the case of such products as a lighting plant, an office appliance or a tractor, a selected mailing list of consumers prepared by the dealer can be used to advantage. In that case, the house organ should be prepared with the consumer as well as the dealer in mind.

Special Mail Campaign. A special mail campaign should not conflict with the regular operations of the sales department. At no time should an offer be made by mail that is not available for the sales force to make directly to customers. Where the campaign is run in territory covered by a salesman, he should receive credit for the business obtained.

The care and completeness with which a mail campaign is planned and the value of what it offers make for its success or failure. The right kind of mailing list carefully checked is essential. Color and illustrations that show the product in use or action, with enough text to explain the use, and a clear price are elements in a successful plan.

A special mail campaign can be used to open new territory, open new accounts that have not been covered by the salesmen and to open accounts in small towns where the expense of a salesman's call is too great considering the amount of available business. The special mail campaign can be used to good advantage for special merchandise. This may be seasonal, a new assortment, or an offer at an advantageous price. No special mail campaign should ever be put out, however, without something in it of specific value to the person addressed. To get out special mail campaigns at regular intervals regardless of what the message may be, hurts rather than helps a business; but if the offer is advantageous to the dealer, the frequency of issue does not decrease its effectiveness.

A service to dealers that may be classified as a special mail campaign is that of a series of numbered bulletins to dealers. They are numbered so that the dealer can be sure he is getting each one, and each bulletin contains one item of interest to the dealer. This may be an explanation of a product or it may be a sales argument, but when the dealer has accumulated a number of these bulletins, he has information that will be helpful to him in selling the merchandise. They should be sent when there is a real message, not at regular intervals and just because the time has arrived.

A mail campaign should be keyed to the audience to be reached. It is not necessary that such a campaign be national in its scope. A certain section of the country may have a mail campaign of its own, and specifically written for that particular section, it is of greater value than if it were written in a general way for the whole country.

A new use for a product is a good basis for a mail campaign. The dealer is interested in the use of the product, because he can pass the idea on to the consumer. For example, the idea that an alarm clock can be used to advan-

tage in the kitchen sold many more alarm clocks. A woman can put a cake in the oven and know that in a certain number of minutes it will have to be taken out, set her alarm clock, and go about her work in some other part of the house, relying on the alarm clock to advise her when to pay attention to the cake. This means less burnt cake and more sales of alarm clocks.

Suggestions to the dealer as to what kind of copy to put in his own advertising are welcomed, if written from the consumer's viewpoint and not too exclusively from that of the manufacturer.

Dealers' Meetings. Group meetings of dealers, all interested in the same distribution problems, are profitable. Where the product is technical like a tractor, motor car, or adding machine, moving picture films can be used to great advantage, supplemented with slides to bring out the detail, giving the dealers a comprehensive understanding of the make-up of the product, its strength and what it will accomplish.

The meetings should be friendly and social as well as instructive. If they can be held in the factory or in a branch house, the dealer will feel more at home from the proximity of products with which he is familiar and will unbend more quickly. The talk should be simple and direct and opportunity given dealers to ask serious questions about the conduct of their business. Most dealers dislike being preached at, but they will take as much as you can give them when it is done with the right attitude. The salesmen can be of great value at a dealers meeting of this kind, particularly if it comprises the men from more than one district.

A very definite program should be prepared showing that thought has been given in advance. If plenty of the product is around, the dealer will take more time to examine it than he will in his own office or store where he is constantly interrupted by customers. A strictly business meeting goes over with the dealers just as satisfactorily as one that has a great deal of entertainment. One thing that does help is a bit to eat, whether it is a sandwich or a more elaborate menu.

Propositions to Dealers. A proposition to a dealer must be of real value, otherwise, it is better not to send it out. It must carry through to the point where money is made for the dealer.

Dealer Service Book. This book can be made a valuable help to the salesmen. Aside from the material offered for sale, it should contain useful photographs such as those of window displays, interiors of stores or delivery trucks, clippings from the newspapers pertaining to matters of interest to the dealer about the product you are selling, sample orders giving an idea of the various dealers who are interested and in what quantity they stock the goods, and samples of the advertising that has been done by dealers. The dealer is always interested in what the other fellow is doing and a clipping from some newspaper, showing an advertisement with data from the dealer as to what results it brought, is always good reading. Statistics should have their place in the service book but should be carefully selected so that they mean something to the dealer.

The salesman should be able to use the service book while conversing with the dealer and keep his place in it so that he can turn the page when the time arrives to illustrate the point. The dealer will hesitate about sitting down

and looking through a whole book of material, but can be interested in it if the salesman uses it to illustrate his talk with pictures and figures.

One of these books that has been used successfully sold over a million dollars worth of dealer's service material in one year. No profit should be made from dealer service material sold; but the sale of the material, at cost, will make it of greater value to the retailer than if he had it given to him. Very few people appreciate what is given to them, but if they have paid for it they use it and get the best out of it.

This book should be displayed by the salesman after the order for the product has been taken.

Free Deals. Like many other subjects this one has two sides. Some manufacturers believe that free deals help them to sell merchandise; others offer deals in order to bring out a second product, selling the first at a sacrifice to introduce the second. Some feel that a free deal "loads" a dealer; they also fear that when the dealer becomes accustomed to getting free deals, he will wait for them and thus the manufacturer will always have to sell his merchandise at a cut in price. The dealers themselves also realize that merchandise purchased in quantity, in order to take advantage of a deal, ties up capital.

Certain leading companies use deals and claim that they are to the advantage of the business. The caution must be given, however, that an analysis of the individual business should be made very carefully before a free deal is offered. If the decision is to use it, then regularly every three, six, or nine months a record should be made of exactly the amount of money that has been given away through free deals. This money comes out of net profit and for every five per cent cut in price, it takes a 25 per cent increase in business to break even. An analysis of the actual expense of a free deal will often change the manufacturer's mind.

A free deal should be differentiated from an introductory deal made to allow the possibility of sampling the product. The latter, however, is open to the danger that the dealer will put the extra supply on his shelf to sell for more profit instead of giving it to his customers so that they may become acquainted with the product.

When free goods are supplied by the wholesaler four methods have been adopted:

1. The wholesaler is furnished the free goods and instructed to pass them on.
2. The wholesaler supplies the free goods by breaking cartons of his own stock and charging them back to the manufacturer at his price.
3. The wholesaler does the same but charges to the manufacturer at cost prices.
4. The wholesaler does the same, then notifies the manufacturer and receives a replacement of equivalent goods.

Where the manufacturer supplies the free goods directly to the dealer, four plans are used:

1. The entire order including the free goods is shipped directly by the manufacturer to the retailer but is billed through the wholesaler.
2. The manufacturer ships the free goods directly to the retailer upon receiving from the retailer the paid invoice.

3. The manufacturer ships the free goods directly to the retailer upon receipt of boxes from the wholesaler.

4. The manufacturer ships the free goods directly to the retailer upon receipt of coupons included in the carton.

One manufacturer says: "The free deal is our most powerful weapon with retailers. They know it is the way they can get the best prices." On the other hand, it is generally conceded that the principle of free deals is not economically sound. A straight discount of an amount equal to the free goods would be more sensible. The word "free," however, beguiles the dealer and at the same time protects the manufacturer from returned goods.

Assortments. We have already discussed the assortment in the individual package and in the carton that goes to the consumer. There is another type of assortment, namely, an order for the dealer packed in one carton including several different kinds of merchandise each in proportion to the average sale of the average dealer. In this way original containers are shipped without broken packages and at the same time the dealer receives an assortment. Only by careful study of stores in various districts can an assortment be made that will be satisfactory to the dealer. If it is not carefully prepared, he becomes overstocked on certain items and there is either a return claim to the manufacturer or an overstocked and unsatisfactory condition for the dealer.

Window-display Plans. Window-display plans are presented for consideration so as to avoid the waste that usually follows an indiscriminate delivery of window-display material to all dealers regardless of their window space. Suggestions as to how windows can be made valuable are sent out to the dealer as a service. An example is that old time plan, always good, always sure of attracting a crowd, the device of pasting a sheet of plain paper across the window, cutting a hole at eye height, and decorating the window with the product on which you want the customers' attention concentrated. This plan is so old that it probably came over with Noah, but it still works. Human nature is the same today as it was the day the first man went up to the window to look through the peep hole.

There is a type of window that always draws a crowd, prepared by an offer on the part of a big department store or some dealer's store that has a large window, to the little girls of the town or city. On a certain week there is to be a doll exhibit and they are invited to bring their favorite dolls, each to be marked with the name of the doll and the name of the mother and placed in the window. Prizes are offered for the best selection considering beauty, novelty, etc. It is easy to figure what a tremendous attraction that window is. Fathers and mothers, uncles and aunts, have to come down to see the exhibition and, of course, while there, they buy something that they have needed.

A telegraph instrument can be located in a big window with merchandise to be advertised also placed on display. The operator sitting at the telegraph instrument which ticks in the regular way, writes a telegram and holds it up to the window. This tells the crowd on the outside something about the merchandise available. If a number of telegrams are left around the window or pasted up on it, people will stop and read them and get the message about the merchandise.

To take merchandise from other stores and give them credit in the display is sometimes good advertising. For instance, if there is a big charity ball to take place in the city and the dealer is in the shoe business, he can borrow a wax figure dressed in a ball gown and add the shoes to match. The dealer in dresses returns the compliment by displaying the shoes and giving credit in his window. A radio can be added to each to supply the dance music.

A contest among dealers in different parts of the country supported by photographs and prizes will give good advertising to the merchandise and satisfaction to the men responsible for decorating the various windows.

A well-lighted window is one of the best advertisements a dealer can have.

The sale of window space by some of the larger department stores and drug stores is a problem which has to be treated on its individual merits in each case. As a rule unless the manufacturer is willing to purchase these large windows and supply enough merchandise to fill them, the discretion of the window trimmer of the store will prevail.

If the dealer can be persuaded to order window material through the dealer's service book or through some advance bulletin from the sales promotion department, he is much more likely to use it, than if it is shipped to him and he is merely advised that it is on the way. Some companies sign up their dealers for window displays over a period of time; others sell a monthly service at so much on a yearly contract and a change of display is sent to the store purchasing, once each month.

Demonstration Plans. Many stores will allow a demonstrator to come in for a certain length of time at the expense of the manufacturer. Other demonstrations may be made by the regular clerks in the store although in most cases the manufacturer contributes something towards the expense. In some cases a certain amount of product is given to the dealer with the understanding that he will demonstrate at his own expense. A demonstration plan is not the same thing as a subsidized department. In the latter a permanent display and sale of the product is conducted at the expense of the manufacturer with the dealer taking a certain percentage of the sales.

Food products are often demonstrated by a dietician. Gas and electric stoves, washing machines, and dish washing machines are demonstrated by showing what they will accomplish. A demonstration is often used in introducing a new product. Dealers do not care to buy stock until some evidence of demand for the goods has been demonstrated. Window demonstration is a type frequently used. This is used for exercisers of all kinds, hair restorers and crimpers, knife sharpeners, suspenders and many other products that lend themselves to the method.

The Booklet Plan. The use of booklets is entirely separate from the plan for a house organ. The booklets are usually devoted entirely to explanations of the individual products. An example of this is the recipe book featuring the product. Booklets are often prepared in connection with machines that require considerable explanation. In other cases such as that of scales for bath room use, the booklets give reasons for the use of the product, as for example the importance of retaining the proper weight.

In the case of a new product like Tish the booklet is made up almost entirely of pictures each picture showing a different use for the product. Booklets

are used for a family of products, to get them all before the public at the same time. As a rule these booklets are sent direct to the dealer or are mailed by the manufacturer to a list of consumers supplied by the dealer. Booklets often carry the imprint of the local dealer so that when the consumer becomes interested he will know where to purchase.

The number of these booklets supplied will depend upon the size of the order, although at times the manufacturer is glad to supply them to the extent that they can be used to advantage. It is usually wise to limit the number to prevent waste. The dealer is more likely to prize them and use them to advantage if the supply is not unlimited.

Sales Plan. When a definite sales plan is supplied to the dealers by the salesmen, it is well to present this in advance to all of the dealers by mail. This allows the dealer to think over the proposition and become interested in it before the salesman calls. It also helps the salesman not to forget the sales plan. Other sales plans that are not considered of so much importance can be presented entirely by mail. Whenever they are thus offered, a duplicate letter should be sent to the salesman on the territory. Samples of such plans are the offering of a flag to every purchaser two or three days prior to the Fourth of July or Memorial Day; a \$10 prize to any customer who will make the best suggestion in one week, for the improvement of the dealer's window; a coupon in each pair of shoes good for an extra pair of shoe laces when presented with the name and address, thereby building a good mailing list for the dealer; concentration by all of the clerks in the store on one article each day, this article to be offered to every customer; a small bag of marbles to be placed in the pocket of each pair of boy's overalls. An appeal that can be made to children, that is adaptable to the merchandise offered for sale, is usually good advertising.

An intelligent use of the telephone by clerks can be outlined to the advantage of the average dealer. The best clerk is put on the telephone calling Mrs. Brown at 9:05, Mrs. Smith at 9:15 and so on each day. The consumer becomes accustomed to these calls and to the voice of the clerk and has confidence that he will send a product as represented. This work can be picked up at odd times so that it does not interfere with attention to the customers in the store. It can not be entrusted to a mediocre clerk; in a number of stores the proprietor is the one who handles the telephone trade.

Simple selling plans of this kind show interest on the part of the manufacturer in the success of the dealer. After they have been sent out they can become a part of the sales idea digest for the use of new dealers.

Special Price Sale. Circumstances arise that warrant a quick presentation of a special price to the trade and this service by mail immediately presents it to the entire trade. If one waited until the salesman made each call, the timely value of the price might have disappeared.

It is not wise to offer too many of these special prices. It will interfere with regular sales by the salesman.

Special Price Items. When an item is becoming obsolete and it is the desire of the factory to reduce inventory in order to make way for some new product, a special price on this particular item may be offered to the entire trade. It must be special or it is of no value.

Standard Sales Talk. Many salesmen object to making a sales presentation in words other than their own. Therefore in some organizations every salesman has a different way of presenting the sales story about the product he offers. The sales promotion department can be helpful by accumulating all of these various methods of presenting the same product including the method recommended by the executive organization. Out of the whole collection the one best way to sell the piece of merchandise will appear. There is only one. If the concensus of opinion presents a standard method as the one best way, it has been proved that if every salesman uses this method a greater volume of business will be done than where the presentation is left to each salesman's individuality. By no means does this mean parrot work. The salesmen who object to the plan should be reminded that they have seen many impersonations of Hamlet on the stage, but probably no actor has ever interpreted this great character in exactly the same way or left the same impression upon the audience. He was repeating, not his own words, but the words of Shakespeare, but the interpretation to the minds of his audience was his own. So the salesman can take the one best way to sell, and put back of it his interpretation of what those words mean by language, method or gesture, adapting it to the intelligence and attitude of the individual buyer's mind. Salesmen, new or old, will appreciate the value of such a presentation once they get the spirit of it and use it.

The National Cash Register Company is an exponent of this plan. They have probably used it more successfully than any other company and they insist that every salesman shall learn the one best way to sell a cash register.

Display. Under this subject we shall discuss the material for display.

Window Display. The importance of this topic has already been indicated in the discussion of window-display plans. According to Davis Meyer of the United Cigar Stores Company two thirds of the entire rental of the store is placed on the window.

The advertising manager of Eberhard Faber Pencil Company sent out a questionnaire from the answers to which the following summary was made.

1. One general window display designed for an average sized window is satisfactory. It is not necessary to have three displays made to fit large, medium, and small windows respectively.
2. The largest-sized piece generally used for window display should be not larger than approximately twenty-four by thirty-six inches.
3. The most popular display is a large centerpiece with wings on each side together with several smaller easel-backed cards.
4. A window display featuring several well-known products made by the manufacturer is preferred to one advertising only a single product.
5. A manufacturer can advantageously furnish display sufficient for a complete window about twice a year.
6. Modernistic art work is desirable. This is the unanimous verdict of both jobbers and dealers.
7. A considerable number of jobbers will send out to their dealer-customers at least one display a year provided these displays are sent to them packed complete in individual cartons ready for convenient reshipment.

8. Business reply post cards can profitably be furnished to jobbers' salesmen so that they can mail these to the manufacturer giving the names and addresses of customers who will use the manufacturer's window display.

9. Paper streamers approximately twelve by thirty-eight inches are acceptable for pasting on windows.

10. Enlarged reproductions of timely advertisements which are being run in national publications, may be used for window display, but quite a large minority of dealers are not enthusiastic about this form of advertising.

11. It is not necessary to have window displays of a style exactly like that of the advertising used in publications.

12. The elements of novelty and of human interest seem to be of major importance.

It is always advisable for the manufacturer to set up an experimental window of average size in his factory or office and experiment therewith before even preliminary suggestions are sent out.

A window display that will break up into units which can be used on counters or shelves will secure a longer period of use. On the back of every display should appear a diagram showing exactly how to set it up, even though it may be very simple of construction. There is always an advantage in the use of action in any display where it is possible. Another feature that will bear emphasis is the utility of the material. If the product itself can be made part of the display or card, it enhances its value. Specifications as to paper and color of ink are important, for a warped or faded window display is a detriment. All material should have the form number and date so that it can be easily indexed, inventoried, and ordered.

The window is the point of contact with the consumer. It says, "Come on in; this is the article you heard advertised over the radio, saw in the newspaper or magazine, on the billboard, or in the street car. I have it for sale."

Snipes. This is not a very dignified type of advertising and one that is rapidly fading out of use. A snipe is usually a poster of one-sheet size and is pasted on fences, barns, or wherever the advertiser thinks he can "get away with it." Stricter laws in regard to this kind of work are now being enacted and its use is decreasing.

News Posters. This is a service used by some dealers to attract attention to their windows. It is supplied by houses equipped for this purpose and gives photographs of news events all over the country with a short explanation under each picture. Some dealers who do not care to use this service prepare their own photographs of local events, parades, accidents, fires, etc. Many people will stop to look at a picture, particularly if it is pasted irregularly on a window. But it is, of course, only good as an attention-getting device.

Giant Advertisements. The value of these is to emphasize the newspaper and magazine advertising by enlargement, making the tie-up a little closer between advertising and the point of sale. It is of value from this point of view, but usually a more valuable display can be planned for a window than a reproduction of this kind. In fact, it would be fully as useful to fold the magazine or newspaper and display it in the window showing the original rather than the giant advertisement in itself.

It is a very simple and inexpensive process, however, and there are occasions where it can be used to advantage.

Enlargement of Advertisement with Broadside. This is another case of the giant advertisement and usually attracts less attention than the original work. A broadside is of value because it goes directly into the hands of the dealer or consumer and is not particularly adapted to display work.

Store Arrangements. This is a subject that must be approached with each dealer in a guarded manner. The sales promotion department must be careful that their knowledge is accurate and that the recommendation will work in that particular store. The voluntary chains have taken this up to a great extent and are successfully adapting to the individual store advantages that have been demonstrated by the regular chain stores. The work includes rearrangement of counters, reducing the number of counters, rearrangement of shelves, improvement of the lighting fixtures, facilities for the use of self service, and other points in securing a modern up-to-date store. Good, clean paint adds one of the greatest values. The sales promotion department should make a study which will include many photographs of satisfactory stores, and equip themselves with information that will immediately be recognized by the dealer as practical and workable.

The dealer should remember that the first fifteen feet of counter and shelf room in his store are the most valuable and also that the space on the right will sell more goods than the corresponding space on the left. He should bring his profitable merchandise to the front and let the customer and the clerk walk to the rear of the store for the every day products that people will ask for whether they see or not.

Counter Display Fixtures. This comprises fixtures for the display of neckties, collars, suits, candy, vegetables, cigars, etc. Counter display fixtures can very well be included in the dealer's service book and sold to the dealer at wholesale price. The fixtures should be attractive, sturdy, and inexpensive. This does not include the counters themselves because they are a part of the equipment of the store.

Store Display Fixtures. A store display fixture that is attractive enough to appear in the advertising of a product by the manufacturer will be used by the dealer to tie up the advertising with the goods at the point of sale. The outstanding example of this is the Sunshine Biscuit rack which for nearly a year appeared in the color advertising and consequently had a prominent display in every store.

In the case of the store display fixture referred to, the dealer paid for it and valued it accordingly. Sometimes a fixture is sold with a small assortment but given away with a large assortment. In some cases the dealer is allowed to keep it so long as he remains a customer of the particular manufacturer and uses the fixture for the display of his products. Sometimes the cost is rebated in accordance with purchases by the dealer. This fixture should be displayed in the dealers' service book.

Electric signs are coming into use quite rapidly for franchised dealers. In some cases the manufacturer pays liberally toward the cost of the sign so long as it remains in front of the dealer's store, while the dealer pays for the space, electric current and maintenance. The Neon Company have a deal whereby they will arrange for payment for the sign over a period of three years, on monthly payments.

Agency signs in windows vary from high grade bronze to ordinary tin and sometimes paper. Such a sign tells the passing public that the store is the agent for a certain manufacturer's products. Most dealers are glad to display a manufacturer's sign of this kind where they have the agency.

Monthly Dealer Service. This usually comprises a window trim once each month or less often, supplied on a yearly contract basis and prepared in accordance with the seasons or the demands of the public. In some cases the manufacturer makes the contract and supplies the service at no charge; in other cases a nominal sum is paid for the displays. They can be sold to the dealer and when sold are used by the dealer, where in many cases displays that are shipped free to the dealer are never opened or occupy preferred positions in his cellar. The quality and appearance of the display is a big factor but in case a dealer signs up for a monthly display, he will usually put it in his window.

Things to Do for the Dealer. At best it is only possible to list a few of these things and the sales promotion department can easily add to the list. Things that are done for a dealer must be of a constructive nature and must be at least of as much advantage to the dealer as they are to the manufacturer.

Demonstrations. This topic has already been discussed under Demonstration Plans. A demonstration by a salesman may be made in the regular course of his selling or he may set aside a Saturday afternoon or time between trains when he steps behind the counter and gives a practical demonstration of the best way to sell his product. Many a salesman has been able to enlarge his order and win the friendship of the dealer by a little service of this kind which shows the dealer that the salesman is interested in the final sale of the goods fully as much as in his own sale to the dealer. The benefit from this kind of work is not unmixed for the salesman will profit by coming in contact with the consuming public and getting their reaction to his merchandise.

Temporary demonstrators are sometimes supplied by manufacturing houses, who travel from store to store, stopping for a short length of time to teach the clerks how best to sell and also to help introduce the product to the consuming public. A dealer secures the help of the demonstrator under some plans by the purchase of a certain amount of the product.

A permanent demonstrator is more often supplied to department stores or very large stores than to the smaller type. In this case the manufacturer is paying for an expert sales person who is working for the benefit of the dealer. A demonstration of this kind loses something of its value when it becomes "a part of the scenery."

Door-to-door Canvassing for the Dealer. This kind of work is carried on under the direction and at the expense of the local retailer. Mechanical devices such as are used in the kitchen, products that the consumer would not think to call for, and products best demonstrated in the home, such as the phonograph or radio, are subject to this kind of selling. It is sometimes handled by telephone appointment, particularly in the case of the radio.

This is a difficult type of selling unless the canvasser is well trained. Courtesy combined with persistence in order to obtain an opportunity for demonstrating are both necessary. The dealer runs the chance of offending his

customers and great care should be taken in selecting the canvasser for this kind of work.

Samples. The secretary of the Exclusive Distributors Association of Columbus, Ohio, has outlined some ideas on sampling campaigns from which we quote:

1. If a company is seeking national distribution, any town is better to begin with than the company's home town.

2. If the product is breakfast food or something similar the most logical time for sampling is the spring. Canned goods suitable for picnics, insecticides, face creams, etc., are other seasonal items.

3. If the company has limited capital, it is possible to sample one town and wait for returns. This money in turn can be invested in another distribution.

4. If the product is to be tested for national consumer possibilities, sampling will quickly show whether there is a probability of general sale.

5. If the company wishes to simplify its plan, it can test its different products in similar towns.

6. If the samples are medical, free distribution is prohibited in many states.

7. It is well to include every home in any one neighborhood selected, in the distribution.

8. If children are to be appealed to, distribution should be made at their homes, not on the school grounds.

9. If the advertising writer has anything more to say on the circular, let him say it. One company is distributing a four-page newspaper telling the whole sales message without cramping. The price for distribution remains the same for literature weighing up to fifty pounds a bag.

10. If dealers are not supplied with the merchandise, it is well to ask that the distribution take several days in the town. This gives the jobber a chance to supply dealers in one section and to reorder when the distributing produces a demand.

When a sample is given away by the dealer, with a word or two about the product, the customer is usually glad to receive it. The trouble with most free samples given the dealer by the manufacturer for this purpose, is that they never reach their proper destination. If the free sample is an original package more often it finds its way to the dealer's shelf and is considered as bringing that much net profit.

Free delivery of samples from door to door is limited by law and is not as popular as it was in years past. If the sample can be placed in the hands of the householder, this kind of distribution is good but expensive. The same applies to distribution on the street.

Samples offered through advertisement and sent in response to request are thus expected and are appreciated on receipt. Samples sent free through the mail from the manufacturer are usually sent on the basis of lists supplied by the dealer, unless there is a particularly accurate mailing list in the hands of the manufacturer.

Original packages to be used as samples are often sold by the dealer at a reduced price in order to get an introduction. When a new package is to be introduced the old package and the new are sometimes put together as a combination and sold by the dealer as an introductory package at a reduced

price. This allowance by the dealer usually comes back to the manufacturer as an expense which he charges to advertising. Sampling through advertisement or in any other way is usually charged to the advertising account and is rightly an expense to be carried in this appropriation.

A case of full-size packages is sometimes given for sampling with ten cases purchased or some similar arrangement. This is a rather difficult kind of sampling to obtain through the dealer. Usually the goods do not come along until some time after the salesman has explained the deal and, when opened and put into stock, the fact that a certain amount was to be distributed free is forgotten. This is not true in all cases but it is a chance that the manufacturer runs, without any reflection on the intent of the dealer.

Movie or Theater Tie-up. Advice is always given in advance as to what movie or play is coming to the local theater and many times a tie-up to the subject or the movie itself can be made by the dealer through his window or through merchandise offered in his store. An illustration of this is the tie-up of Rogers Peet and Company advertising with the legitimate theater which is so planned that their program advertising always has a hook up with the play then on the boards. This tie-up may be made by a reference to a certain type of clothing that is included in the movie, or a geographical location, or an artist who has endorsed the product in question. People like timely advertising and the dealer gets the name of being up to date when he can tie up in this way to current plays.

The Chesterfield Company made a good hook-up with the movies in their film "Memories" which was incidental in its advertising and connected the Chesterfield name with attractive pictures of bygone days. Commercial films get public distribution when the advertising is kept incidental to the value of the picture as an entertainment or educational feature. Where it is not possible to get public distribution through the theaters there are many ways of getting it through private and semiprivate exhibitions. Such a film must carry human interest so that it is interesting as a film. Preparation of these films must be by professionals, not by amateurs.

Combination Sale of Product and Allied Items. The association of ideas through the placing of related merchandise side by side will encourage the consumer to purchase more than originally planned. An example of combination selling is found in the Marshall Field windows at Easter when one whole window is given up to a complete toilet with the accessories near by so that hats, dresses, shoes, gloves, parasols, and all of the things that go to make a complete ensemble are displayed. Shoe stores have put in handbags matching the color of the leather in the shoes and have found that it makes a profitable addition to their sales. In the grocery store you find crackers and cheese side by side, or doughnuts and coffee; a head of lettuce, a bottle of salad dressing, and a can of shrimp make a complete salad. A Gillette safety razor and Palmolive shaving cream, neckties with handkerchiefs to match—many combinations can be worked out in every type of store. More and more are windows made to present combination sales and allied items rather than a number of odds and ends which leave no impression on the passerby. Zipper suits for children are matched up with an aviator's cap. A box of tools increases the purchase. Stationery is displayed beside a

fountain pen and stand. Such associated items help increase sales and make the "plus sale" so valuable in reducing the cost of selling.

Advertising Inquiries Sent to Dealers. Inquiries received through advertising and sent to dealers are no longer making much impression on the dealer. The inquiries should be used by the salesman directly with the dealer. He can go over the names with the dealer so as to show the value of the inquiry or else arrange to go out and make a call upon the inquirer and turn the inquiry into actual sales for the dealer with resulting profit.

Some manufacturers are satisfied if they answer an inquiry with printed matter trusting that this will lead to the purchase of the merchandise. Where the number of inquiries from an individual city or town is very large the salesmen can use them to advantage by personally presenting them to the dealer after complete information has been sent to the inquirer. The case can be presented to the dealer that if he does not supply the demand that has been created, some other dealer will.

Letters to Consumers over Dealer's Name. A letter that is written as a dealer would write it, prepared by the manufacturer and mailed by him to a list supplied by the dealer, is good advertising. Care, however, should be taken that it is in the language that a dealer would naturally use. Customers receive so many letters of this kind that they are rather skeptical.

Recommendation by a dealer of a certain product he wants to sell, will have its effect upon customers who have grown to have confidence in him and in his statements. The dealer must be careful what he allows a manufacturer to send out over his name. He values the prestige he has built up with his customers and does not want anything to happen that will break it down.

A much more effective use of this method is to send the letter to a carefully selected list limited to those who are known to be able to buy if the letter should prove convincing. An indiscriminate distribution of letters over the dealer's name does not bring returns commensurate with the expense.

Broadsides to Consumers over Dealer's Name. This kind of mail matter is the exception rather than the rule. Broadsides are more usually sent to dealers. Where such a broadside illustrates a machine in action and the message requires considerable space and color this method may be useful.

Missionary Sales for Dealer. Missionary selling is selling to the retailer at the expense of the wholesaler and the manufacturer. It is done because of a desire to introduce new goods more rapidly than would result from advertising or the normal sales activity. In some cases the jobber asks the manufacturer to create a demand before he takes the goods into his stock. The method is to send a special salesman around among the dealers to take orders which will be delivered through the dealer's wholesale house. The great weakness of the method is that many of the special salesmen's orders are not *bona fide* or are given by the dealer to get rid of the salesman and with no intention of making the purchase from the jobber.

The missionary or specialty salesmen must be of high-pressure type, able to call on a stranger and get an order on the first call. Regular salesmen on the territory are usually resentful of this kind of work unless they receive credit for the business obtained. The tendency on the part of the missionary

salesman is to overload the dealer, thereby spoiling business later for the regular salesman.

In some cases a specific charge for the sale is made. The Vortex Manufacturing Company of Chicago tried this out on the basis of charging 10 per cent for all orders the missionary or specialty men took, representing either new or repeat business up to a certain amount. Above that amount quantity orders were made at a lower price so the charge back was reduced to 6 per cent. On very big orders sales prices were still lower so no charge back was made. The blanket deduction from discount would particularly apply where there is a charge for house to house demonstration work which is paid by the department or agency carrying the article in stock. In many cases this is also charged where a demonstration is made in the retail store and the leads are followed up with house demonstration by the man in charge.

Prize Contest for Clerks. A contest for clerks, paid for in prizes of cash or merchandise, should never be used without the 100 per cent approval of the dealer. It insures special attention on the part of clerks to the merchandise in question and many dealers object to this because they claim the time spent on this special merchandise is lost from other lines and the total nets a loss. This depends, of course, on the style of merchandise, the kind of contest, the prizes offered and the interest of the clerks. Where there is no objection on the part of the proprietor a carefully outlined contest with good prizes will enlist the interest of the dealer's clerks and increase the volume of sales in a store.

Prize Contest for Consumers. Contests of this kind are usually conducted by inducing the consumer to save labels, cartons, or something pertaining to the merchandise. Sometimes it is a contest to choose the name of a product or a vote for something. Probably the contest for a name is the most popular with consumers.

Premiums to Clerks. It is claimed that there are many houses in the west that have been furnished from attic to cellar with premiums given by the Wrigley Company. This method of rewarding clerks should always be checked with the proprietor to be sure that he has no objection.

Premiums of practical value awarded on the point system, that is, so many points entitling the clerk to a choice of certain prizes, will bring the best results. Premiums sometimes take the form of what is known as "PM" which is an offer to the clerk of so much on sales of the merchandise within a certain period of time. Sometimes the dealer will put a "PM" on merchandise on which he is overstocked and wishes to move rapidly. Drug stores are well adapted to this kind of selling as also are department stores of certain types. The higher class proprietors are not willing to have a manufacturer give premiums to the clerks as they wish to keep the remuneration of clerks entirely within their own control.

Training Dealer's Clerks. Nothing is more important than that the dealer's clerks thoroughly understand the merchandise they offer for sale. Meetings held after hours for the dealer's clerks by intelligent salesmen from the manufacturer are welcomed by proprietor and clerks. Every clerk has the idea that eventually he would like to be a salesman on the road and given a chance to learn salesmanship from a successful salesman he takes in all he can get.

Successful training was carried on by a food shop in Philadelphia. Every morning when the clerks arrived they found a certain number of packages of food that had been opened, with a typewritten story beside each, and every clerk was obliged to taste, investigate, and read before he went behind the counter. Then each one was supposed to push the items that had been brought to his attention for the day.

The larger department stores maintain schools for the training of retail clerks in merchandising. Teachers with a knowledge of pedagogical method accomplish the best results. Store employees or even salesmen do not get the same results that a practical teacher well informed can get. Courses in retail salesmanship are available from many sources, and these can be adapted to the use of individual businesses. Promotion in many stores is dependent upon the clerk's success in such courses. It is more than a training in regard to different kinds of merchandise. It is a training as to how to meet the public and make successful sales. It is especially necessary that a training course be given on mechanical products, not only to the people who are selling but also to the people who are depended upon to give service. In many cases a button or diploma is evidence that a clerk has graduated and these are worn and shown with pride by the clerks. It is tangible evidence that they have reached a certain degree of achievement.

For Dealer Use. There are various items that can be furnished to the dealer which will be of assistance.

Dealer's Survey. The sales promotion department can sometimes supply information that will enable a dealer to understand better what the possibilities in his town or city may be. Or the dealer can be instructed how to make a survey, for example of the number of houses that are lighted by electricity, those that have telephones, those that have radios, etc. Any information of this kind will give him a better understanding of what growth is possible for his business and the kinds of merchandise he can sell.

Newspaper Cut and Copy Service. The advertising department or the sales promotion department can supply to dealers a newspaper cut and copy service. This consists of made up advertisements in the form of cuts that newspapers can use, copies of trade-marks and packages, reproductions of advertising that has been running in other papers, and even the preparation of special copy set up in cut form for immediate use.

Work of this kind by the dealer can best be carried on through a well defined advertising campaign. Sometimes the manufacturer is willing to enter into a fifty-fifty arrangement whereby 50 per cent of the bill for advertising over the dealer's name is paid by the manufacturer. In this case the manufacturer is especially interested in the kind of copy that appears. Many advertising managers are willing to guide a dealer in his local advertising even though no fifty-fifty arrangement exists. The local dealer gets the advantage that his copy appears concurrently with advertising of the product in other newspapers and magazines.

Catalogue for Dealers' Distribution. Much merchandise does not have a catalogue. Where there is a complete line, however, catalogues are necessary to the dealer and are very often reproduced in cheaper form for general distribution. Some catalogues are beautifully bound so that they will be

prominent in the dealer's store; some are in loose leaf form so that additions and subtractions can be made at various times. Catalogues are particularly necessary for dealers where it is impossible for them to carry a complete line and they depend upon ordering through the jobber or manufacturer as items are needed. Complete information in this case should be included in the catalogue so that there will be no misunderstanding in placing an order.

Envelope Insertions for Dealers' Distribution. These can often be the same inclosures that are used to advantage in the original package. There are, however, two opinions in regard to the use of this kind of advertising. Evidence secured by the Phoenix Mutual Life Insurance Company indicated that inclosures cut down the per cent of returns on direct by mail letters. An envelope can be so stuffed with various inclosures that the whole lot is thrown into the waste basket without being read.

Booklets for Dealers' Distribution. What has been said about envelope insertions applies to a certain extent to booklets, although booklets can be made of much greater value and will be taken more seriously. There must be a real reason for the booklets and if they are distributed by the dealers, they should go only to those who will be interested. The dealer should stamp his name on the booklet for the tie-up with his own store. The use of booklets has already been discussed under Booklet Plans.

Special Price Coupon for Retailers' Distribution. Coupons are used by dealers to stimulate the retail trade. There was a time when manufacturers paid something toward this kind of distribution but it has very largely developed into a retail device. There is a special form of coupon called the voting coupon which eventually results in a special price. This is not a phase of sales promotion work, however, that is taken very seriously by many manufacturers.

Publicity. Publicity is used to the best advantage when supplementing advertising.

Movie Slides and Films. There was a time when the advertising movie slide could be placed at a price at almost any movie house. Even now some of the smaller theaters will carry a campaign of this kind, although it is becoming more difficult to place such films. There is an improved development of the film, called the commercial film, that is receiving fairly wide publicity. This has a real scenario, the advertising is small in amount and the plot magnified, so that it often gets prominent display. In many cases the advertising is so incidental that people do not realize they are looking at advertising.

Metal Signs. When metal signs could be attached to trees, fences along the side of the road, and other prominent places, there were many of them used. They have their place in sales promotion work at the present time, but discrimination has to be used in their posting. This kind of sign on the highway giving mileage is sometimes worth using for merchandise which is classified as incidental purchase. Metal that does not rust can be used for a designating agency sign and also becomes more or less of a permanent fixture inside the store.

Canvas Banners. The use of these is very largely on confectionery stores, dry good stores, or stores where there is fadeable material in the window,

and they can be used as sun curtains during the sunny part of the day. The canvas itself carries advertising matter, often an agency name for a product in the store.

Decalcomanias, both imported and domestic, are made in beautiful colorings and add to the attractiveness of windows on which they are placed. By their use a sales organization can leave a trail of designating signs over their entire territory which will last for many months. Care should be taken that the colors are such that they will blend with whatever merchandise is placed in the windows. They should be small in size so as not to obstruct the view and should tell their story in a few words. The preferred positions for "decals" is eye height on the window or store door.

Store Cards. Many of these cards are originally made for street car display. An extra quantity is purchased, a cheap frame made, and they become an addition to the store. There is a firm in Vermont that specializes in the manufacture of these frames for store cards. Other cards are made to hang from a chandelier or bracket, and others can be tacked on cases or in any position for temporary use. Some of these are made very cheaply, others are of real beauty and remain in use for a considerable period.

Business Shows. There is a divided opinion in regard to business shows. The outstanding ones are the Aeroplane Show, Automobile Show, Motor Boat Show, Radio Show, and Office Appliance Show. Apparently these bring good results because the manufacturers go into them year after year, and great care is taken to make an interesting exhibit. They do furnish a means whereby progress in the industry can be followed as in no other way. The smaller type of business show, such as the food show, has passed from its original attractiveness and unless put on by people who understand their business, it produces very little for the manufacturer. There still remain county fairs and state fairs where display is made and at certain points attracts the crowd. It is a question as to the value of such business shows unless selling privileges are allowed and if they are allowed, it must be under restrictions that prevent the show from being turned into a Coney Island.

Calendars. Many advertising managers and sales promotion managers turn up their noses at calendars, but it is well to remember that the calendar is a billboard of small size placed in a customer's house to stay there for twelve months. Some manufacturers make the advertising so prominent that the calendar loses its attractiveness, others maintain due proportion and find their calendars in great demand. There are advertising calendars which are sold by the manufacturers at a price because of the beauty of the design, subject matter or material.

Fans. These have a short season, but advertising fans distributed when needed make friends for the dealer supplying them. We have seen them in churches, at concerts, and at picnics, carried around all day long—good publicity for the thoughtful dealer.

Blotters. This is a selective medium and can be used by manufacturers who have a product that will appeal to office people. Banks, insurance companies, restaurants, and the like use this type of advertising.

Novelties. These are of many varieties, such as the booklets used by insurance firms to get appointments, the small brushes given by the Fuller Brush

salesmen to get a hearing, banquet novelties, or fountain pens for men who write orders. The "feature match book" advertising Squibbs Shaving Cream and Dental Cream is novelty advertising. The paper match is printed in the form of the tubes of the product, the cap being represented by the head of the match.

Trade Papers. The proper preparation of trade paper publicity should be a serious part of the sales promotion manager's job. His close contact with dealers all over the country puts him in touch with valuable information which they are glad to print if it has actual news value. Those who are interested in getting advertising in the trade paper should get it in the usual way and pay for it. There are, however, kinds of information, especially such as can be illustrated by pictures, which dealers all over the country are interested in and the trade papers are glad to print. Ideas as to successful campaigns, unusual windows, unusual store arrangements and many other things properly presented, will find their place in the trade paper.

So we come to the close of a chapter that could well be extended into a book. To exhaust the subject would mean exhausting all there is in advertising and sales, for sales promotion touches each and every part.

CHAPTER IX

DETERMINATION AND CONTROL OF MARKETING COSTS

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All of the marketing functions discussed in the foregoing chapters may be well planned and executed, but since net profit is the goal of every business enterprise, it is essential that the total cost of all of these functions be something less than the total gross profit. It is therefore necessary to know just how much each of these functions does cost, also how much they should cost, not only in total but in some detail and in terms of measurable units.

It is also necessary to establish some cost control mechanism if these costs are to be currently measured and kept under control.

This chapter therefore deals with the whole problem of marketing costs, first offering some general comments on the factors that have caused the steady increase in selling costs in recent years.

There is next a rather detailed explanation of how selling costs are determined, and of the control mechanism that should be set up. Finally, there are illustrations of the kind of facts that are brought to light through an analysis and study of selling costs, and which have led to reduced selling costs and increased profits.

General Comments. It will undoubtedly help to a clearer understanding of this subject if we review the history of the causes which have brought selling costs to the point where they are now of major importance, if not uppermost, in the minds of all executives who have to do with the distribution of any commodity.

Until a few years ago little attention was paid to marketing costs, the emphasis being entirely on manufacturing costs and problems of production. The country was large and growing rapidly and the needs of the people and their capacity to absorb all manner of products seemed almost unlimited. The gross margin was ample and therefore there was little necessity for any very thorough analysis or study of selling costs.

That situation has now changed. It is still a fact that the majority of manufacturing companies do not know as much as they should about their manufacturing costs, but, as compared with twenty-five years ago, the situation has greatly improved. Both colleges and professional associations have done much to spread the gospel of good cost accounting throughout the United States, and the principles of manufacturing cost accounting are generally well known and recognized.

The situation which existed in relation to manufacturing costs some twenty-five or thirty years ago was true of general and selling costs until very recently. The total cost of administrative and selling activities was of course known, but little attempt had been made to allocate these costs to different territories or products. If there was in some instances an attempt to distribute these expenses to a few general and quite different lines of product, that was about as far as it went. The last few years, however, have brought about a very noticeable change.

It is not necessary to describe here in detail the changes in the economic structure of this country since the World War—the general prosperity, the wide diffusion of capital, and resulting increase in demand for every variety of product, luxury as well as necessity.

The war left us with greatly increased manufacturing facilities. The necessity of employing that unused capacity brought about the invention of new products, and the inauguration of extensive sales and advertising campaigns to create a demand for the products. As these were successful, more manufacturing facilities were created. Then, too, as improved production and manufacturing methods had become known to all manufacturers the emphasis of competition naturally came to be placed on selling and distribution rather than on manufacturing.

The result has been that as manufacturing costs have decreased or remained stationary, general and selling costs in total and per unit have gone up. In other words, the increased cost of selling has in many instances more than offset the gross profit from the extra volume, particularly since in many instances that gross profit has been decreased by a reduction in selling price—one of the most common methods employed to increase the volume of sales.

It is natural, therefore, that many companies should recognize the need of more accurate and detailed information regarding general and selling costs, in order that this expense may be kept under control and reduced if possible.

While a few companies have made great progress along this line, and have conducted many investigations in various branches of administrative and selling activities, it is fair to say that work in this field of cost accounting is still very much in the experimental stage. Those companies that have made the most extensive studies and investigations are the more certain that they yet have much to learn, and it is still true that the overwhelming majority of companies have done practically nothing in this field.

Relation of Manufacturing to Selling. Coordinating the activities of the manufacturing and sales departments is perhaps the most important, and yet one of the most difficult problems to solve. The manufacturing department would like to be able to produce only standard goods in large quantities, and the sales department would frequently like to accommodate their customers by giving them whatever they want, even if that is slightly different from standard.

Before competition was quite so keen, and the gross margin so narrow, a reasonably satisfactory solution could be obtained from an accurate knowledge of manufacturing costs and the effect of volume production on them. Under present conditions that is not sufficient, and it is necessary to know all that is possible about selling costs: what products and what territories yield the

greatest profit, what effect volume of sales has on selling costs, what are reasonable standards of selling costs, and what volume must be obtained in each territory and in each line.

The Problem. Accurate knowledge of selling costs is important for two reasons: to determine an accurate total cost as a basis for a selling price, and to make it possible to control and reduce these costs. The latter is by far the more important reason.

If setting the selling price were the sole purpose, it would be sufficient to know only the selling cost of the line as a whole, since the base price must be the same to every customer and in every district. In many lines, it must also be the same for a wide range of sizes, colors, shapes, etc.

Different Types of Organizations. There are, however, so many different types of sales organizations, so many methods of distribution which may be employed, and withal such a variety of products which may be sold by the one company, that it would seem worth while to know all that is reasonably possible about the cost of these various methods and activities, if one is to decide which method is the most effective and therefore the cheapest.

For example, there is the common plan of direct representatives selling to other manufacturers, wholesalers, and retailers. Goods may be distributed entirely through jobbers, with the company's direct representatives doing only promotional or missionary work. There are many organizations selling direct to the consumer on the house-to-house canvas plan. Sometimes the entire output is sold through a selling agent.

Then there may be branch sales offices, and branch warehouses, or goods may be handled by agents on consignment. These are only the more common types of sales organizations, and there are many variations of these. Many companies employ several of these different methods, along with direct mail selling, and frequently are in doubt as to which is the best selling method to use.

It cannot be claimed that knowledge of selling costs per se gives the answer but certainly it will show where the weaknesses lie and where corrective methods are most needed.

The principles here set forth will apply to every type of what may be called field selling or distribution, whether by a manufacturer or wholesaler. Retail (store) selling involves many quite different problems and no attempt is made to cover that phase of distribution in this chapter.

Considering the product itself it is of course important to know the net profit resulting from each line; how much the volume of any unprofitable line must be increased to produce a profit and, naturally, the expense that will be necessary to get that increased volume.

As regards territories and salesmen, it is necessary to know the net profits produced from each territory and the causes for any fluctuation from the standard; it is important to know the net results of each salesman's efforts—how much of his work is promotional or servicing as distinct from actual selling; whether the territory is sufficiently cultivated; whether the territorial division should be changed; and whether it is more profitable to have agents working solely on commission and handling other lines, or to have direct company salesmen.

Should branch offices or branch warehouses be established, and should they be sales and service offices only, or should some of the accounting and other work be handled by these branches? Which class of customers is the more profitable—the wholesaler, the retailer, or the consumer?

These are only a few of the more important questions that must be answered if the business is to continue to be successful. Many more facts, perhaps of less importance, will become evident as general and selling expenses are analyzed and studied in connection with the varied activities coming under this heading.

In approaching the problem of any one company the first step is the analysis and distribution of the actual general and selling expenses covering a recent period—the period to be of sufficient duration to present at least a complete season—usually at least a year. The next step is the determination of standards for each item of expense and the setting up of the necessary routine for the measurement and control of the actual expenses.

Treatment of General or Administrative Expense. It is of prime importance that there be a clear understanding of what should be included in general and selling costs. It might seem sufficient to define general and selling costs as including everything that is not manufacturing, but unfortunately there is some difference of opinion as to what constitutes manufacturing costs.

This is not because there is any serious misunderstanding as to where the manufacturing function stops and the selling function begins. This will usually be when goods are delivered to finished stores, but in some instances, particularly when goods are manufactured on customers' orders and no storage is necessary, it will be when goods are delivered to the shipping room floor.

The difference of opinion is in regard to what is to be done with the so-called administrative functions or expense. The purely administrative expenses would include the salary of the chairman of the board of directors, president, treasurer, and possibly the secretary of the corporation, the expenses of their offices, and any other purely corporate and financial expenses; but many companies have added to this group all expenses connected with accounting and general office routine. This leaves in selling expense only those items that are directly identified with sales and advertising and shipping departments.

In theory, all expenses may be considered as either manufacturing or selling, and it is evident that these so-called administrative items represent activities that are really for the benefit of producing goods or distributing them. There are two methods of handling this group of administrative expenses, each of which has its advantages and disadvantages, and the accountant will have to decide which method best suits the particular organization under consideration.

One is to analyze each administrative department, or each item of administrative expense, and decide how much belongs to manufacturing and how much to selling. Much of this distribution may be purely arbitrary, but some items can be distributed accurately.

For example, the president of the company may have to make an arbitrary distribution of his time, and all of his office expenses will go along with his salary. On the other hand, practically all of the accounting department

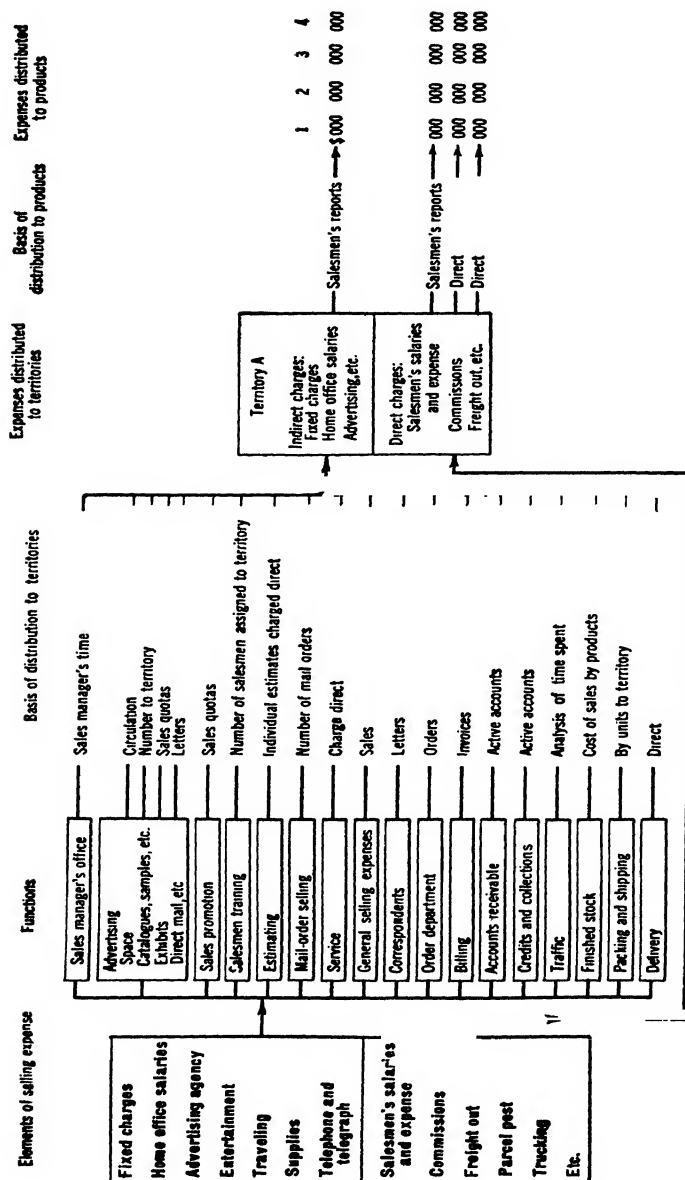


Fig. 1.—Chart of accounting plan for the distribution and control of selling expense.

activities can be divided between work for the manufacturing department, such as handling accounts payable, and work for the sales department, such as handling accounts receivable. If it is worth while, all general office services can be analyzed and a fair distribution made. If this method is followed all expenses are then either manufacturing and included in manufacturing costs; or are selling expenses, and included in selling costs.

The other method is to leave in an administrative group those items which cover purely administrative functions or which do not readily lend themselves to distribution between the two major activities. This total would be expressed as a percentage of manufacturing cost plus selling cost, and added to the sum of those two to give a total overall cost.

The explanation following, and the accompanying chart, is intended to cover the principles of either plan. It deals with every class of expense that may definitely be considered a part of selling, and also an item of general selling expense which represents the share of the administrative group belonging to selling. This group may include only purely administrative expenses already mentioned and also accounting and general office items as well.

The chart accompanying this explanation should help to an understanding of the classification and distribution of expenses through the various functions and auxiliary departments to the direct sales units and products.

Distribution of Elements of Selling Expense. While it is important to know the cost of selling one line of product as distinct from that of another, the first or primary distribution would naturally be to the various direct or auxiliary sales departments, and to territories.

The reason for that would seem to be obvious. Since control and measurement of expenses is the prime object, and since reduction of cost can be effected only through such control, it is necessary to allocate all expenses to what may be called the operating units, just as in determining manufacturing burden costs, all expenses are distributed to departments or operating centers.

The sales territories may be considered as the direct or producing units, and in many instances a territory is the district or customers covered by an individual salesman. All other departments of selling are service or auxiliary centers. The chart presents a list of the expense elements and of the departments or functions of a sales organization. Probably every sales organization performs every one of the functions mentioned, but only the larger organizations would have a separate department for each of them.

In the foregoing paragraphs of this article we have explained the distinction between manufacturing and selling costs, and administrative and selling costs, and indicated the present-day necessity for analyzing and allocating definitely the expenses arising out of the selling and distributing functions of a business so that they may be efficaciously controlled.

We shall now explain the mechanics of distributing the selling expenses so that definite knowledge concerning the purpose for which they were incurred and where they were incurred may be ascertained and responsibility definitely fixed. In order to make this explanation completely lucid, the chart accompanying this article will serve to amplify the description and give a mental picture of the routine involved.

So that the method of distribution and its successive steps will be entirely clear from the beginning we shall first briefly describe the plan that is followed. Primary elements of selling expense are allocated either to selling and distributing departments or directly to specific products and sales territories, depending of course on the character of the expense. The nature of some expenses is such that they can be charged directly to territories and to specific products in those territories. Other expenses must of necessity be charged to departments. After all the expenses of a department are collected and totaled the total amount is then distributed to the various sales territories on whatever basis is the most logical, and the one generally recognized as being most nearly correct. The final step, after all expenses have been charged to territories, is to allocate them to the various products and classes of products that are sold in each territory. When this distribution is finally completed, it is readily known not only how much it costs to sell in each territory, but how much it costs to sell each of the company's products. As we point out later in this chapter, this information is of inestimable value, since it permits comparisons of expense to be made between different territories for the same product, and when used with the sales figures for that product it provides an excellent measuring device for marketing effort.

Distribution of Elements of Selling Expense. A. *To Departments or Functions.* 1. *Fixed Charges.* The fixed charges on the land and buildings are prorated to the various functions or departments shown on the chart on the basis of the number of square feet of floor area occupied. The fixed charges on equipment, such as desks and other office furniture are charged to the functions on the basis of the value of the equipment used.

2. *Home Office Salaries.* Salaries of individuals employed in the Home Office are distributed to the functions which they serve. In some cases an employee's duties take in more than one function and in these instances salaries must be divided according to the service rendered to each function and charged accordingly. A portion of officers' salaries will probably be considered as being applicable to sales and since they would be of a general sales nature they would be carried to the function entitled general selling expense.

3. *Advertising Agency.* All of the expense in connection with advertising that is placed by an advertising agency will be distributed to the advertising function. Subsidiary records in the advertising department should reveal how much of this expense is incurred for the different kinds of advertising.

4. *Entertainment.* Expenses incurred by members of the home office for entertaining will generally be charged to general selling expense, but if they are in the interests of any of the other functions those functions will be charged. For example, the entertainment expense of the sales manager will be carried to the sales manager's office, and the entertainment expense of the credit manager will be distributed to credits and collections.

5. *Traveling.* Traveling expenses of the sales manager may possibly be charged in some instances to territories and products, but more often they will be distributed to the sales manager's office. Other traveling expenses that are incurred by employees of the Home Office will be charged to the functions which they serve.

6. *Supplies.* A study of the accounting records will show the amount of supplies used for each of the functions listed. Of course some of the supplies may be directly chargeable to certain sales territories and products and, for these supplies, the distribution would be to the territory and product affected.

7. *Telephone and Telegraph.* Telephone expense is charged to the functions, usually by an estimate of the number of calls handled for each function. However, a much better method is to have the telephone operator keep a record for a period of two or three months of the number of calls made by each department or for each function, and this record will provide fairly accurate information for allocating this expense. The out-of-town calls can easily be charged to the departments making the calls. Telegraph expense would be handled in a similar manner.

8. *Postage.* The amount of postage used by each department may be estimated but a record can be kept for two or three months, and this record will serve to estimate the distribution of the postage expense to departments or functions.

B. To Territories and Products. 1. *Salesmen's Salaries and Expenses.* The salaries and expenses of salesmen will be distributed directly to the territories in which they work.

2. *Commissions.* Commissions paid to salesmen or sales representatives can be definitely charged to the territories where they are paid.

3. *Freight Out.* An analysis of freight bills for shipping the company's products to the customer will indicate how much of this expense should be allocated to each territory.

4. *Parcel Post.* By analyzing the parcel post record it can be quite easily determined how much of this expense should be charged to each of the sales territories.

5. *Trucking.* If the trucks are owned by the company a burden rate per hour may be easily computed and the trucking expense can then be charged directly to sales territories.

If the trucks are owned by a trucking company the trucking bills should be analyzed in order to find out the amount of expense incurred for each territory and the charge to territories will then be made on this basis.

Distribution to Territories or Sales Units. Having distributed each element of expense to departments or direct to territories, the next step is to show how the total expenses of these several auxiliary services or departments are to be distributed to the territories or direct sales units. Each department or function listed on the chart will be taken up in that order.

The basis of distribution suggested is the one that would seem to cover most situations, and has been followed in many instances. If an analysis of the situation indicates that some other basis is more equitable, or accomplishes practically the same result with less work, obviously that is the basis to use.

Sales Manager's Office. This will include all salaries and expenses attached to the sales manager's office, except as he has assistants who devote their time to particular phases of the work. All expenses of this office should be distributed with the sales manager's salary. The sales manager will have to estimate (possibly make a little study) the distribution of his time, having in mind that he gives attention not only to the direct selling activities, but also to some or all of the other functions or departments.

Advertising. It is sometimes difficult to separate advertising from sales promotion and that is not particularly necessary. They are treated separately here only because the work may be handled by quite separate divisions. When this is the case advertising covers the writing or approval of copy, preparation and distribution of catalogues, booklets, and circulars, as well as the distribution of samples.

The total advertising expense is usually a comparatively large item, in many instances the largest single item of selling cost, and it is therefore necessary to give considerable attention to the distribution of this expense.

The cost of getting out catalogues, booklets, price lists, samples, etc., is made up of two kinds of expense; namely, the direct cost of materials and time of personnel devoted to those activities, plus the proper proportion of the overhead expenses of the department. This proportion is the result of the distribution of this expense on the basis of time or pay roll. The sum of these two component parts is then distributed to the territories and products for which the expense is incurred.

Catalogues are usually sent to all customers and prospects and the total expense of this item should be distributed to territories on that basis. At the same time a further distribution should be made between lines of product, and that division should be on the basis of the catalogue space devoted to each of the several lines. There may be a few occasions where it is necessary to recognize the fact that certain territories are not a market for some of the lines and therefore should not be charged with the full share of the total catalogue cost. In such cases the distribution should be first to the product lines and each line then considered separately.

The cost of price lists, booklets, and circulars will be treated in the same way. The distribution of the cost of samples offers no particular problem. With all of these items it is usually easy to keep the cost separate as between the several lines of product.

The cost of space in publications presents a somewhat different problem, although not a difficult one. It is easy to get the circulation of each advertising medium in each territory represented (assuming that the medium is not strictly local) and the distribution of the cost should be on the basis of circulation, weighted in some instances by the relative purchasing power, and also by territories which are not markets for certain products.

Sales Promotion. This may cover a variety of activities, from the study of sales statistics, and research and surveys in the field, to the introduction of new products and the opening of new territories. Sometimes the expenses can be charged direct to the territories and to the products benefited. Where the work is in the nature of a general promotional campaign, the division between territories should be on the basis of the potential sales or sales quota for the respective territories, on the theory that the effort is more likely to be in proportion to the expected volume than on actual sales.

Salesmen Training. There are so many different methods of salesmen training that it is impossible to establish any one rule for the distribution of this expense. Sometimes men spend a certain length of time in the factory, learning about the product and how it is made, at the same time attending classes and lectures. If they actually do work in the several departments,

their salaries (or at least an amount representative of the value of the work they do) should go into the cost of those departments. Otherwise their salaries, together with the salaries of the instructors and the necessary expenses, make up the total cost of salesmen training. This may be charged to the territories to which the graduates have been assigned.

Sometimes men are put in the field with more experienced men. If they later serve as assistants or junior salesmen in that same territory, their cost should be charged there. Otherwise, the total expense of training, including their salaries, is taken in total and distributed as suggested in the previous paragraph.

Estimating. By estimating is meant, primarily, the cost of estimating on customers' specifications, which is a very important activity with some companies. It may also include estimating on new standard product lines, or changes in existing lines. The expense of the former would be charged to territories on the basis of the number of estimates figured, perhaps weighted by the character of the product estimated and the latter on the basis of the actual or expected sales.

Mail-order Selling. In some organizations all of the selling will be by mail with no direct representation or solicitation, while in others a mail-order department is used to supplement salesmen's efforts, or to cover outlying districts where there is no direct representation. In either case the following explanation will apply. All of the expenses of the mail-order department will be collected and then distributed to territories on the basis of the number of mail orders received from each territory. There is not the same need for a territorial division, but it is advisable to divide the total mail-order territory by states, or into the units that would be covered by a salesman.

Service. Service departments are very important ones in many industries, such as the automobile, household appliances, office appliances, certain types of machinery, etc., and the activities may be quite varied. They may cover not only servicing and maintenance of the equipment, but also the matter of adjustments and allowances. Much of the expense can be charged direct to territories, and the balance will usually be distributed on the basis of sales of the product in dollars or number of units. It may be necessary to consider the total amount of equipment or product that has been sold in the territory or only the quantity outstanding that is still covered by a guarantee.

General Selling Expense. The treatment of this item is somewhat special in nature and has already been discussed at some length previously in this text.

Correspondents. Many organizations have a group of assistants at the home office, who handle the routine correspondence with customers and salesmen. Sometimes each correspondent covers certain territories, sometimes certain lines of product. If each one covers more than one territory it will be necessary to determine whether his time is divided equally over all territories which he covers, or to estimate just what the division should be. Possibly an analysis of the time spent over a short period will help in arriving at a fair basis of distribution.

Order Department. This department will include the interpretation and actual transcribing of the orders, and may sometimes include pricing, as well

as the keeping of necessary order records. The distribution will be on the basis of orders received.

Billing. This work is frequently combined with the order department, and the distribution should be on the basis of bills sent out.

Accounts Receivable. This department covers all work in connection with customers' accounts and the distribution would usually be on the basis of the number of active accounts, but may be on the basis of the number of invoices. It may also include sales analysis, various kinds of sales statistics, sales cost accounting, and budgets, and the cost of that part of the work would usually be divided equally among all territories.

Credit and Collections. The work of this division may be divided into two classes: that of passing on all orders for credit and approving the credit of new customers, and the collection of past due accounts. The amount involved is rarely large enough to warrant any separation, and the distribution would usually be on the basis of the number of orders.

Traffic. The function of the traffic department, as distinct from shipping or delivery, is to determine routings, check and approve rates, see that cars are available, handle damage claims, etc. The basis of distribution will depend upon the division of time to these several activities. Usually it will be satisfactory to consider traffic with shipping and assess traffic costs along with shipping.

Finished Stock. It has been previously pointed out that this department may be considered a part of manufacturing cost, but whether that or as a part of selling cost, the method of applying and distributing the expense will be the same. The stock room has to do with the physical product, and therefore the expenses may be expressed as a rate per unit of value or quantity of product and distributed to territories on that basis if not as a part of manufacturing cost of sales.

The expenses include power, light and the usual items of expense for operating a department of this kind, plus the carrying charges on the inventory. An analysis of the volume of the different lines of product handled and carried in inventory, the space occupied, and labor of handling, and the value, will indicate whether there should be more than one rate. Once the rates have been determined, it is a simple matter either to add this item as a part of manufacturing cost, or assess it to the territories as goods are shipped.

Packing and Shipping. This does not cover the standard container in which standard products are always packed, but only the outside shipping case or crate. The standard container (definitely identified with the product) is properly considered a part of the manufacturing cost.

An analysis and study of shipping labor and packing materials will show that standards or rates can be established for the several lines of products handled, the rates being expressed as a cost per dollar or quantity of product. With the rates established the matter of distribution is simple.

Freight, express, parcel post, and trucking charges (if not charged to the customer) should be charged direct to the several territories.

Delivery. Where companies have their own delivery service, each truck usually has its own route and there is therefore no difficulty in assessing this cost to the territories served. The cost may also be assessed to the several lines of products on the basis of pieces, bulk, weight or value carried.

Distribution to Products. Having now distributed all expenses to territories or salesmen or what might be called the direct sales units, the next problem is to apply them to the several lines of product handled. Many of the items of expense are readily identified to products, as has been pointed out in the paragraphs covering the distribution to territories.

The items which will usually come under this heading are advertising, stock room, packing and shipping, delivery, estimating, and sometimes sales promotion and correspondents.

There remain, however, some very important items, not so easily identified to products. These are salesmen's salaries and expenses, supervision, and, in fact, all expenses not already allocated to products. It is, of course, possible to analyze many of these items covering a given period and determine the relation to products, and that may be worth while. Usually, however, it will be satisfactory to group all of these items together, consider them as auxiliary to the salesmen's efforts, and distribute them with the salesman's salary.

It may seem difficult or impossible to determine any basis of distributing salesmen's time, particularly if each man handles more than one line, but the ratio of effort to results must be known, if only in a very general way, if sales and profits are to be increased. Many companies have found it very profitable to get quite detailed reports of a salesman's time, showing the hours spent in travel, waiting, selling, and in other phases of the work. Some companies keep this up only long enough to get an idea of the amount of time spent in these several activities (which is of course constantly changing) but most companies find the information of sufficient value to continue it permanently.

Such data will furnish a basis for distribution of the salesmen's time. It may be decided, for example, that irrespective of results, 75 per cent of a salesman's time is spent in selling one line, and 25 per cent on another, and that percentage will be used until a further study indicates that the ratio should be changed. It may be that number of orders, number of units, or cost or sales value, will be the most satisfactory basis. The only thing that is certain is that no one basis will fit all cases, but a thorough analysis of sales and expenses over a representative period will certainly indicate which basis will more nearly meet all conditions.

After all, as was stated earlier in this chapter, it is the distribution to the functions and territories that is of primary importance for the purpose of control. When the best basis available for distribution to products is used, the results may show the cost to be as low as 10 per cent in one territory and as high as 25 per cent in another. If the average of all territories and therefore for the complete line is 18 per cent and the gross margin is only 20 per cent, it is obvious that something needs to be done, and a difference in the method of apportioning only a part of the expenses would probably make no material difference in the results.

Repair and Parts Sales. In many industries the sale of repair parts and sometimes of repair work accounts for a very considerable volume. It may be that no further selling effort is necessary to get this business once the original equipment has been sold, but practically all expenses except salesmen's

salaries and expenses, advertising and sales promotion, or possibly a portion of those, do apply to this class of business.

That being the case, this is one instance where it may be of no value to distribute this expense pertaining to repair and parts sales to territories, since the control of the expense is not with the salesman but with the home office or branch office.

Cost Control Mechanism

General Comment. It has been pointed out previously in this chapter how the various selling expenses are distributed from their sources to the territories, and from the territories to the various products or lines of products. The usual results of this distribution of selling costs is the revelation, if it may be termed such, that the cost of getting the merchandise from the manufacturer, jobber, etc., to the consumer, has been too great or, at least, that it has been more in some territories than the circumstances would seem to warrant. It is therefore necessary to reduce and control these expenses.

It is not a new principle that costs are best controlled by comparing them with some standard measure or value. In other words, it is necessary to know how much a thing should cost before any decision can be made that the cost is too much. The first step in a cost control program, therefore, is to predetermine and establish unit standards of selling expense to which actual disbursements and costs may be compared in order to find out if they are excessive and by how much, and why. It should be borne in mind that cost control must be aimed directly at the person or function responsible for the expense, and the intent is to know exactly how much money each person or function responsible should spend or should have spent under the conditions which existed.

These standards, of course, cannot be picked out of thin air, but can be determined in a usable form only by careful analysis of the sources of expense. Furthermore, no standard should be merely the average of past expenses, but should be developed by analysis of the efficiency with which the work is performed in the light of how much expenses should be under present or forecasted conditions. While it cannot be said that any set of conditions will be constant, still some set of conditions must be assumed before any kind of a standard can be established. The setting up of the conditions may be treated in either of two ways. If the circumstances of the business are such that future conditions may be predetermined with some reasonable degree of accuracy, then the problem is comparatively simple and involves a single reliable quota. If, on the other hand, there is no experience in sales forecasting, and it is felt that it would not be possible to predetermine conditions with a reasonable degree of accuracy at the start, then the flexible feature of expense control may be adopted, until such time as the sales forecasting program has attained some degree of perfection. At least the entire range of possibility of conditions from one extreme to the other is known, this range may be broken up into steps and each step considered as an independent forecast. For example, assume a volume of sales varying between \$500,000 per annum and \$1,500,000 per annum, and that there is no certainty where

sales will be between these two extremes. Therefore, this range from \$500,000 to \$1,500,000 would be subdivided into steps, each step representing a change in magnitude sufficient to cause considerable change in effect. These steps should be close enough to reflect all important changes in resultant expense and, on the other hand, as far apart as possible to minimize the amount of work involved. For the purposes of outlining a program of selling costs control, this flexible feature will be assumed and the setting of standard unit selling costs shown for a number of steps in the range of possible sales volume.

Definition of the standard is in order at this point. What is sought is a logical, sound, and reasonable unit of value for purposes of judging results. The conditions under which the standards will be set up must be within the range of probability, must reflect neither extreme, must be reasonably attainable, and in every way normal. Likewise, the standards themselves must be within the range of probability, logically attainable, and in every way normal. It seems, therefore, that the word normal is more applicable and it will be used henceforth in this text.

Some of these normals will be fixed for all volumes of sales, others will vary directly or inversely in proportion or by steps. As stated previously, normals should be developed by analysis but in some cases normals for territories or products will be distributed portions of normals for functions or departments.

Normals of Elements of Selling Expense. Next consider the method of establishing normal values for elements of selling expense within each of the departments or functions involved. Among these elements of expense will be some items which are common to many departments or functions and will therefore have to be distributed accordingly, and there are others which belong wholly to and are therefore chargeable only to certain specific departments or functions.

A. Distributed to Functions. 1. Rent. Under the first group which is to be distributed we have the item of rent, or corresponding fixed charges for office space, light, heat, maintenance, etc. Briefly, this item is more or less fixed, except as permanent reductions or enlargements are made in the various departments. If the range of possible sales volume reaches a point which would require permanent increase in space facilities, it will be necessary to estimate the space charges beyond the point of present space arrangements. Otherwise the normal values for this element of expense will consist merely of the fixed charges incurred under present conditions.

2. Salaries and Expenses. Under this heading are three types of salaries and expenses, namely, executives', office employees' and salesmen's.

Officers' salaries and expenses are more or less fixed, regardless of the volume of business, except possibly in the case of a very large organization having its sales function rather finely divided, in which case a change in the volume of sales within the range of possibility might require the establishment of new departments or the consolidation of two or more existing departments. in which case there would be a radical change in the amount of money involved. Barring this, however, the executives' salaries would be the same for the lowest extreme in the range of volume of sales as at the upper extreme. With this, of course, should be included any bonuses paid to sales executives as a result of sales volume.

Executive sales expenses are more likely to vary in proportion to sales volume, although here we may have a case where the sales executives go out into the field and perform more intensive promotion or missionary work during periods of low sales volume than in periods of high sales volume, which would tend to keep the sales executives' expenses constant. The item of officers' salaries is considered to be among those included with other general administrative expenses and is therefore distributed as shown on the accompanying chart. (See p. 252.)

B. Charged Directly to Functions. 1. Salaries and Expenses. Office clerical salaries should vary more nearly in proportion to sales volume, for the reason that the functions become more finely divided and it becomes possible to relate the number of persons employed to actual volume of sales. For example, if the number of bills should increase or decrease by an amount equal to or greater than the capacity of one clerk, then it becomes necessary to add or subtract one such clerk. In each department or function, therefore, there should be a change in the normal for office salaries whenever the volume of work changes enough to warrant a change in the number of clerks employed.

The degree to which the salesmen's income varies in proportion with volume of sales depends upon the plan of wage payment for salesmen. Salaries, of course, remain constant as long as the salesman remains on the pay roll, while bonuses, commissions, etc., vary more directly in proportion to sales volume. The method of rewarding salesmen for the results they attain must be taken into consideration in establishing the normal for the several steps in the range of possible sales volume. Salesmen's expenses may or may not have any relation to sales volume, depending upon their plan of campaign. The extent to which an increase in volume of sales is a result of an increase in the volume of sales per invoice or an increase in the number of invoices would have a bearing on this and would indicate whether or not normal expenses for salesmen should vary in proportion to sales volume.

2. Supplies. This item is not large usually but is readily set up for the reason that supplies are inclined to vary almost in exact proportion to sales, at all events, an easy and obvious method of interpolating the normal values throughout the range of volume may be found.

3. Other. There are a number of miscellaneous items, such as postage, telephone and telegraph, autos and trucks, freight out, etc., the normal for which can readily be established according to the steps in the range of possible sales volume.

C. Charged Directly to Territories. Among those elements of sales expense which are wholly within and directly chargeable to specific territories we have warehousing, branch manager's office expense, salesmen's commissions where a salesman is confined to a specific territory, etc. Obviously these will be set up in normal exactly in the same manner as the distributed expenses, but they will be set up for steps in the range of territorial sales volume rather than in the range of total sales volume. Since the volume of territorial sales is less than the volume of the entire company, the problem is somewhat simpler but the same principles prevail.

The distribution of those elements of expense which are common to two or more functions or departments is adequately covered in the foregoing

paragraphs of this text and will not be repeated here. It is necessary to say only that such distribution must be performed for these normal values of these elements of sales expense in order to pass on to the next step of the summary of normals by functions or departments responsible.

Summary of Normals for Functions and Territories. *A. By Functions.* Following out the principle of expense control aimed directly at the persons, departments, or functions responsible, the normal values of expense must be collected according to departments and functions, which departments or functions are shown on the accompanying chart. It is necessary to collect the normal values of selling expense for each step in the range of sales volume under each of these departments or functions, and thus to secure total normal expense available for comparison according to the volume of sales realized.

This control of selling expense should be exercised each month, possibly in some cases as often as every week, and it will therefore be necessary to inspect these normals on a monthly (or weekly) basis. The main thing is to be able to compare the actual expenses of each functions with the normal expenses for that function for the period, and for the actual volume of work which they did.

B. By Territories. Still following the principle of aiming this selling cost control directly at the persons or functions responsible, it is likewise necessary to set up normals for the various elements of expense located entirely within a territory and under control of the territorial representative. Typical of this class of selling expense are the salesman's expenses, warehousing, branch manager's office, etc. These normals are set up in exactly the same way as the normals for the general office expenses by analysis of the sources of expense for each step in the range of possible sales volume.

1. **Salesmen's Expenses.** The most logical way of establishing a normal for this item is by analysis of the salesmen's routing and of the various items of expense, such as hotel, meals, traveling expense, entertaining, etc., according to their regular route of travel and duration of stay at the various points on their route. Just how this expense will vary according to volume of business will depend on a great many factors. It may be constant if the product and territorial conditions are such that the coverage is constant, or it may vary inversely with volume of sales if a salesman is expected to exert additional selling effort in times of diminishing business; or it may vary directly with volume if the company chooses to curtail expenses along with a decrease in sales. Whatever the conditions, it will not be a difficult matter to establish normals for this item of salesmen's expense.

2. **Branch Office.** The conditions under which the normals are established for the various steps in the volume of sales will duplicate to a large extent the conditions under which the normals are set for the central office expenses. In other words, there are clerks, stock clerks, handlers, and other personnel whose status is the same as that of the central office personnel, and the normal of this expense will be set up in exactly the same manner as the normal for the corresponding central office.

3. **Warehousing.** This item of expense is more apt to be constant than it is to vary with a change in volume of sales. If any change may be expected it will probably be a direct change for the reason that any change in the

volume of business incurs a corresponding change in the amount of its expense through an increase or decrease of space charges, labor costs, etc. The warehousing expense will more nearly approach a direct relationship to volume of sales than most items, and it is even possible that twice as much volume of sales will mean twice as much warehousing expense.

C. Application of Functional Normals to Territories. It has been pointed out how the expenditures of the several selling functions or departments may be controlled in total quantity through the use of the normal values for their expenses for the month or week. After this has been done there still remains the question as to whether or not the selling functions or departments have expended their energy not only in the right amount but in the right direction. By that is meant that a selling department may keep within its normal expense for a period, but still have expended too much time or money in one direction and not enough in another. This might be illustrated by the shipping department, which may have a monthly normal of \$500, made up of \$250 for the handling of merchandise going to each of two different territories. It is possible that the shipping department may have devoted an excess proportion of its time and expense to one of those two territories at the expense of the other, and when such an occasion occurs to any appreciable extent, it then becomes necessary to redistribute these departmental or functional normals to the several territories, so that we may have a measure of the performance of each department or function in terms of the territories, and perhaps even in terms of the various products within the respective territories.

This can readily be done by distributing the total normal of each department or function to the territories served in the same way that the actual expenses of the same department or function was distributed to the territories, as pointed out previously in this text. The bases of distribution are the same as were used in distributing the actual expenses, and the final results would be the setting up of normal for each function in terms of the territories served, and if it is desired to carry it further into the product within the territory, then, again, the same basis of distribution as was used for actual expenses may be adopted.

Considerable good judgment will be needed in deciding whether or not this is necessary, as it entails not only additional effort in setting up the normals, but also additional effort in distributing actual expenses monthly for comparison with these normals. While it is conceivable that it should be done, it must be kept in mind that the whole problem of selling expense control should not be weighted down with too much clerical and accounting detail.

Having established normals as measures of attainment, the next requirement is a simple and direct accounting procedure which will provide for the charging of all disbursements accurately and their distribution where necessary. The same bases for the charging of these expenses will be used as was used in establishing the normals in the beginning.

Accounting Procedure. Some of these typical procedures may be illustrated by three representative types of expense charging and distribution. Probably the simplest type of charge would be the salary and expense of a salesman operating entirely within one territory and, in this case, the salesman's salary and expenses will be charged to this territory. Another type of

expense is that of the traffic department, the total monthly expense of which would be charged to the various territories and products according to percentages representing the service of this department to the respective territories and products, in the same proportion used to establish the normals of expense for this department. Certain other types of expense should be charged individually, according to the territory or product which incurred this expense. Typical of this would be the expenses of the estimating department, where it is probably wise to keep time and material expense records for estimating on the individual inquiries, so that when all of this expense has been collected it can be charged against the territory from which this inquiry came. Obviously this should be done by the head of the estimating department on a regular form supplied for this purpose. This form should contain provisions for the number of hours of time expended by estimators at their regular hourly rate, for the various materials consumed in making the estimate, and for all other elements of expense incurred. When completed and charged by the chief estimator, this form would then be forwarded to the accounting department and charged against the territory and product to which it has been distributed.

There are, therefore, at least three types of routine expense and three types of corresponding methods of charging them, namely, the expense incurred entirely in the territory, the expense charged as a percentage of the total monthly expense, and the individual job expense charged directly. It should not be a difficult matter to decide upon the proper method for each of the elements of selling expense.

Since the internal routine of the accounting department for collecting and charging expenses is merely another application of well known accounting principles and procedure, it will not be necessary to go into that in detail here. It should be remembered, however, that a multiplicity of selling expenses, territories and products, need not operate to prevent a plan of selling cost control from functioning smoothly and accurately. After all, there are only three important things to be kept in mind, first to distribute normal expenses and charge actual disbursements upon the same bases and then to provide that the data flowing into the accounting department is clear, definite, and concise. This internal routine will depend to a large extent upon the form of the various monthly or weekly selling cost reports which the management desires. These we will take care of in the following paragraphs.

Cost Control Reports. In considering the set-up of reports which are to be the tangible instruments of cost control, it must be recognized that an almost infinite number of combinations of conditions may exist, and without assuming a set of conditions peculiar to a given industry and company it would not be possible in this text to outline in detail either the type of reports best suited or the method of compiling them. Only the important principles to be kept in mind can be pointed out, and the importance of making these reports as simple, direct, and effective as possible emphasized.

The main thing that should be shown on these reports are the selling departments or functions which we desire to control, the volume of sales or other indicator of the quantity of work each has performed, the normal expense corresponding to that volume of sales or work performed, and the

actual cost of operating that function for the period, together with the variances, plus or minus, and any explanations of these variances. These principles may be illustrated by a simple case of the billing department, against which would be shown an indicator of the work performed either in volume of sales or number of bills sent out, the corresponding normal expense, the actual expenses of that department (including all distributed expenses), and the difference, plus or minus, showing whether or not this department has been running as it should have run. Before this report goes to the executives for review and action all explanatory comments should be included so that the picture is complete and clear in all necessary detail.

In the case of a large company having two or more divisions, obviously there will be such a report for the head of each division, and all of these divisional reports will be combined into one report for the central executives.

It is probable in many cases that each individual department should have its report which contains considerably more detail than the report which summarizes the operations of several departments.

It must be recognized that virtually every individual company would have its own particular set-up in this respect and that each company must exercise its own judgment in deciding how far to go in detail on these monthly reports. Too much cannot be said in emphasis of the proper combination of simplicity for effectiveness and completeness of detail for usefulness.

Prevention of Cost Variances. The foregoing with respect to the subject of selling cost control mechanism has been largely curative in action. In other words, the expense report has been provided showing what happened and why. Such historical data is of the utmost importance and absolutely necessary, but there is a further valuable function that the program can and should be made to provide. It would be very desirable to prevent the occurrence of excess cost, and this selling cost control mechanism may be preventative in nature by placing the normal selling expense values in the hands of the department heads responsible, so that they may have before them at all times a guide which will tell them how much money they are responsible for. While this is not possible in some cases, it is entirely practical in others, particularly those functions whose expense of operation has a direct relation with volume of sales. It is suggested that the heads of such departments be supplied with the normal values set up for each of the steps in the range of sales volume, and then kept advised as to the trend in sales volume, so that they will know at all times what their expenses should be, they will have the means of adjusting these expenses at the earliest possible moment so as to keep them in step with the conditions of the business, and they can therefore be held properly responsible for their part of the entire picture. It hardly needs to be said that where this plan is followed out, these department heads should have played an important part in establishing the normals in the beginning, these normals should have had their approval, and they should be caused to feel the degree of their respective importance in carrying out the entire program.

It is probably obvious to the reader that the fundamental principles of the cost control mechanism outlined here are very similar to the principles which have been applied to the control of manufacturing costs. While the

application of these principles of standard costs to manufacturing is somewhat new and as yet not thoroughly perfected, nevertheless, they have attained considerable success and are widely recognized as the best available means of knowing and controlling manufacturing costs. Under these circumstances, it is no more than logical that the same principles may and should be applied to the selling activity and it is equally logical to assume that the same degree of success will be met in the field of selling activity. There have already been a few applications of these principles to selling, these efforts have met with considerable success, and it is believed that these results more than justify faith in further such application.

Some Uses of Selling Cost Data. After going through the analysis and distribution of selling expenses as described in the preceding pages, the accountant will inevitably learn many facts which will be useful to the executives in reducing selling costs generally, and in directing the activities of the various departments. It will be well, however, to suggest a few of the more important facts which may be learned, the knowledge of which has helped many companies to an increase in volume and a reduction of costs, and therefore to increase net profits.

Can Volume Be Increased without a Disproportionate Increase in Costs? This is undoubtedly the most important question which the sales executive has to answer. With the constant struggle for increased volume to keep factories operating at something like normal, there is grave danger of obtaining that increased volume at a cost that is in excess of a reasonable margin between manufacturing costs and selling price, even if the selling price itself is not reduced.

Knowledge of the cost of selling in each territory and by products will show how much the volume must be increased in that territory to produce a profit and at the same time will indicate how much it will cost to get that increased volume. There have been many instances of certain territories being abandoned altogether when the facts showed they were being covered at a loss.

Profitable and Unprofitable Products in Different Territories. Accurate knowledge of selling costs will also show which products are profitable and which are unprofitable in certain territories. Inevitably certain lines can be sold in certain territories with less effort and less expense than in others, either because there is a larger potential volume or because of competitive conditions. Without adequate cost knowledge there is danger of trying to increase the sale of certain products in certain territories just because it is thought the volume ought to be larger. Adequate knowledge of selling costs will bring out these facts and probably indicate how the situation can be improved. Even if it is considered good policy to continue handling these items at a loss, that will be done with full knowledge. At least it will be possible to restrict the proportion of the unprofitable items sold in any one territory or to any one customer.

Which Sales Method or Type of Organization Should Be Adopted? This question cannot be answered through a knowledge of selling costs alone, but obviously if more than one plan is followed in any one organization it will soon develop that one is less expensive than the other, and ways and means will be found to distribute the entire product in the most economical manner.

There have been many instances of companies finding out that methods which they supposed profitable were just the opposite, and as a result changed from selling agents to the direct representative plan, or from distributing through jobbers to selling direct to retailers or consumers, or to establishing or discontinuing branches, etc.

Should Branch Offices or Warehouses Be Established? Here again is a question which cannot be answered strictly on a cost basis, because the matter of service to customers enters in, and it is hard to measure that strictly in terms of dollars and cents of selling costs. On the other hand, cost is certainly a very important factor, and if the establishment of a branch office or warehouse means a disproportionate cost in distribution, something else must be done.

Even if it seems good policy to open a branch office or establish a branch warehouse to give better service, save delivery time and transportation costs, there is always the question of how much of the routine work should be transferred to the branch and how much retained at the home office.

Salesmen's Compensation. Detailed knowledge of selling costs is most useful in arriving at a proper basis of salesmen's compensation, or, to put it in another way, in seeing that each salesman gets a reward that is equitable as compared with all other salesmen. Volume of sales alone is not at all a fair measure, since there are many ways by which the increased gross profit which should come from the larger volume of certain salesmen is more than offset by his increased costs. Frequently this increased cost is not disclosed in the direct expenses but only through a proper analysis and distribution of the cost of the various service functions, and a realization of the "concessions" which certain salesmen make to retain the customers goodwill.

Minimum Sale. Many companies distributing a variety of small and inexpensive items are confronted with the rather troublesome problem of keeping down the number of orders per dollar of sales. An analysis of their orders shows that a very large percentage are for very small amounts, and analysis and study of selling costs disclose the average cost of handling orders through the branch or home office. Bringing these two facts together frequently discloses that a large percentage of orders are handled at a very distinct loss.

This is a condition that cannot be corrected immediately, but if every salesman is aware of the facts he can usually do something to improve that condition and decrease the number of orders which are too small to make it pay to handle them by themselves.

Use of Cost Data for Special Studies. The foregoing covers only a few of the more important questions which frequently arise. Through an analysis of selling expenses, the accountant or sales executive will immediately discover many ways to put this cost data to good use, once the facts are put before him. Furthermore, any department head or any salesman in the field will do a better job if he has some knowledge of selling costs and the effect of his activities on them.

Conclusion

It may seem to the reader that the analysis and distribution of selling expenses, and setting up the necessary control mechanism is a very compli-

cated and expensive undertaking. The same thing was thought about analysis and control of manufacturing costs some years ago, but experience has proven that in actual practice it is not nearly so expensive as it would seem, and that, in any event, it is worth all it costs. Companies that have learned something about selling costs have found out that the same thing is true of selling costs.

It should also be remembered that it has been necessary to describe every possible item of expense under almost every possible condition, and probably no one organization would begin to have all of the problems which are suggested in this chapter. If the accountant will start with an analysis of the more important items and control them, refining the procedure as the need indicates, the immediate value of the facts disclosed will be evident and it will be found that the effort and expense involved is much less than might be supposed and is very much worth while.

CHAPTER X

RETAILING

THE DEPARTMENT STORE

BY BISHOP BROWN, *Professor of Store Management, Research Bureau for Retail Training, University of Pittsburgh*; and IRWIN D. WOLF, *Secretary, Kaufmann Department Stores*

What the Department Store Is. The department store is the retailing center of the community. It is not one store but many stores divided into separate departments, each unit carrying many lines of merchandise and being held to account for its own profit and loss. The separation of merchandise units into departments is the origin of the name "department stores." The number of departments varies with the size of the store. The medium- and large-size stores contain from 100 to 250 departments.

The varieties of merchandise carried in stock are a distinguishing feature. In general, only stores which carry ready-to-wear, yard goods, and house furnishings are rated as department stores. The following lines are listed in a classification of merchandise adopted by the Controllers' Congress of the National Retail Dry Goods Association:

- Dry goods.
- Small wares.
- Men's and boys' wear.
- Women's and misses' ready-to-wear.
- Shoes.
- House furnishings.
- Miscellaneous.

Each classification is divided into as many departments as the store wishes to manage.

Location. The location of a department store is vital. If ideally located it stands on main traffic routes or at intersecting streets. It is situated so that crowds, which are essential to its growth, can reach it easily. And its general appearance must be sufficiently attractive to appeal to large numbers of people.

The grouping of many retail stores forms the retail district. This concentration is not only convenient for customers but is important to the store. Where different types of stores in the same price range locate near each other the benefit is mutual. The location of a five-and-ten-cent store close by a low-priced department store has advantages for both.

Store Architecture. The type of department store building should express the character of its business. It should be suitable to receive the clientele which it serves. In outward appearance stores show various architectural influences. The present trend is toward buildings of stability, dignified in appearance and with a minimum of decoration. The modern influence of set-back elevation and plain straight lines has already found its expression.

The Number of Department Stores. In a survey conducted in 1925, the Marketing Research Department of the Fairchild Publications estimated the number of department stores in the United States to be 4,015; their total yearly net sales amounted to \$3,904,884,000. This representation was in cities with a population of 10,000 or over.

NUMBER OF DEPARTMENT STORES AND THEIR SIZE*

Group	Number of stores (arranged according to size of operating capital)		Total of operating capital	Total of yearly net sales
	Stores			
1	831	\$ 5,000 to \$ 10,000 . . .	\$ 6,232,000	\$ 31,970,000
2	693	10,000 to 20,000 . . .	10,395,000	53,326,000
3	448	20,000 to 35,000 . . .	12,320,000	63,202,000
4	413	35,000 to 50,000 . . .	17,552,000	90,042,000
5	249	50,000 to 75,000 . . .	15,562,000	79,833,000
6	351	75,000 to 125,000 . . .	35,100,000	180,063,000
7	294	125,000 to 200,000 . . .	47,775,000	245,086,000
8	255	200,000 to 300,000 . . .	83,750,000	429,637,000
9	130	300,000 to 500,000 . . .	52,000,000	266,760,000
10	80	500,000 750,000 . . .	50,000,000	256,500,000
11	92	750,000 to 1,000,000 . . .	80,500,000	412,965,000
12	179	Over \$1,000,000	350,000,000	1,795,500,000
	4,015 stores of all sizes with total . .		\$761,186,000	\$3,904,884,000

* Reproduced with the permission of Fairchild Publications, Inc.

In his "Economics of Retailing"¹ Dr. Nystrom estimates the number of department stores in the United States for 1928 to be as high as 8,000, with a total volume of \$6,500,000,000. This includes stores in smaller cities with less than 10,000 population, and such stores as William Filene's Sons Co., Franklin Simon, Best & Co., and Chas. A. Stevens & Bros., which do not handle yard goods and which therefore were omitted from the Fairchild survey.

Indexes of Department Store Trade. The Federal Reserve Board, through the Federal Reserve banks, collects monthly reports from department stores as one aspect of retail trade. The reports from stores are expressed as indexes

¹ The Ronald Press Company, 1930.

and are influenced by changing price levels. The chief value of these reports lies in the indication of the trends which are developed by customer demand.

The following chart pictures the rise and fall of department store sales and stocks (adjusted for seasonal variation) from 1919 to 1929 inclusive.

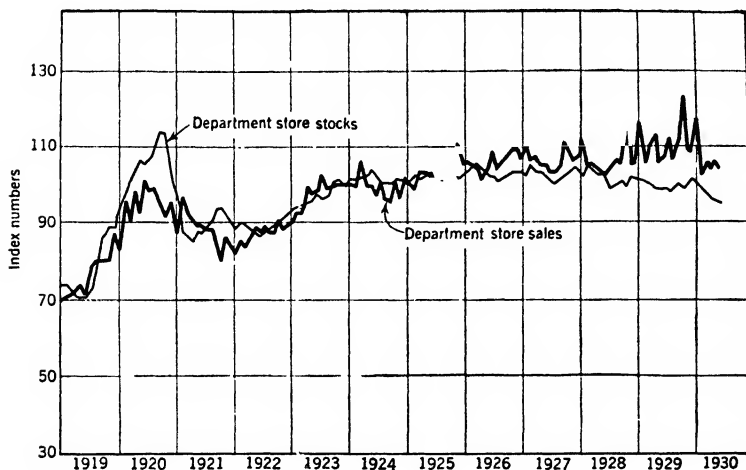


FIG. 1.—Monthly movement of Federal Reserve Board indexes of department-store sales and stocks, adjusted for seasonal variation, 1923–1925 = 100 (Reproduced by permission of Fairchild Publications, Inc., from *Retailing*, July 15, 1930.)

The relation of stock to sales should be noted for the years 1920 and 1929 respectively. A decline in sales in 1920 left stores overstocked. In the effort to prevent a repetition of this condition, a hand-to-mouth buying policy began to develop which showed its increasing use in 1929.

The following table of indexes gives a comparison of sales of department stores in the twelve Federal Reserve Districts for 1929. It is interesting to note that in nine out of the twelve districts sales were higher in 1929 than in 1928. Even in December of 1929 sales were only 2 per cent lower than December, 1928, and at that point were greater than in any year preceding 1927.

Kinds of Stores. Department stores may be classified:

- a. According to volume.
- b. According to ownership.
- c. According to type.

Volume. For purposes of statistical comparison the Harvard Bureau of Business Research in its annual report of Operating Expenses of Department Stores for 1929, classified department stores as follows:

INDEXES OF VALUE OF SALES OF DEPARTMENT STORES BY FEDERAL RESERVE DISTRICTS (FROM 1930 "COMMERCE YEARBOOK")

NOTE. Monthly index numbers are not adjusted for seasonal variations. Comparison, especially for 1919 and 1920, are affected by change in price levels (monthly average, 1923 to 1925 = 100).

Year and month	Boston	New York	Philadelphia	Cleveland	Richmond	Atlanta	Chicago	St. Louis	Minneapolis	Kansas City*	Dallas	San Francisco
1920.....	91	91	93	98	93	113	...	...	105	...	117	83
1921.....	89	87	89	86	89	96	81	90	97	...	97	79
1922.....	92	89	91	87	86	90	84	89	93	...	90	83
1923.....	98	96	101	100	97	100	99	99	99	...	96	96
1924.....	100	99	99	99	99	98	98	98	99	...	100	99
1925.....	102	105	100	101	104	102	103	103	102	95	100	104
1926.....	105	109	102	103	107	106	109	105	99	95	109	110
1927.....	106	111	98	105	105	107	110	103	97	95	106	113
1928.....	104	112	96	103	106	107	117	104	90	97	108	117
1929.....	106	117	96	105	110	104	119	105	86	100	110	120
1928:												
January.....	98	94	75	85	81	85	90	82	74	80	89	98
February.....	78	89	76	85	82	91	92	85	74	77	88	92
March.....	96	102	96	101	105	110	109	105	93	93	109	110
April.....	99	103	91	101	99	102	109	99	84	93	102	114
May.....	101	109	95	106	106	114	118	104	93	94	116	116
June.....	111	112	96	100	102	98	113	94	87	84	98	101
July.....	76	77	65	78	75	77	86	73	70	71	71	94
August.....	78	78	65	85	78	86	96	83	82	85	80	116
September.....	97	111	89	101	96	98	124	107	99	102	112	113
October.....	119	135	115	112	125	123	130	119	90	110	125	129
November.....	119	134	114	110	127	120	132	119	91	108	126	118
December.....	181	207	174	174	197	180	200	175	140	168	184	200

1929:

January.....	96	97	78	86	82	89	97	81	70	83	90	106
February.....	76	90	75	83	78	87	95	85	68	76	85	91
March.....	101	111	99	105	114	113	120	110	92	102	115	115
April.....	97	108	90	105	102	104	113	99	84	99	105	111
May.....	108	113	93	108	109	107	121	105	88	96	115	120
June.....	108	116	95	103	107	93	117	96	82	87	97	103
July.....	76	80	62	80	76	75	87	76	65	72	74	100
August.....	83	82	69	92	81	85	100	87	78	85	85	120
September.....	98	119	86	101	103	97	127	120	97	105	110	113
October.....	127	145	122	118	131	121	129	117	87	112	129	129
November.....	119	133	114	108	133	112	132	119	91	113	129	125
December.....	176	207	173	171	204	171	189	164	132	165	179	203
1930:												
January.....	104	99	80	78	85	76	90	72	70	74	80	104
February.....	77	89	73	77	81	83	87	83	66	75	85	90
March.....	88	103	83	88	98	93	96	93	87	89	99	112
April.....	107	120	95	112	113	104	119	109	99	97	106	114
May.....	108	119	91	104	112	101	113	98	90	94	106	114

* Monthly average sales in 1925 = 100.

1. Department stores with net sales of \$2,000,000 or more.
2. Department stores with net sales from \$500,000 to \$1,999,000.
3. Department stores with net sales less than \$500,000.

With figures reported by these classifications, any store may compare its operating expenses with the reported expenses of stores in its own group.

Ownership. So many changes have taken place in department store management in recent years that classification falls into two main groups: independent stores, and chain stores.

Independent Stores. There are two subdivisions of this group. One is the independently operated store working entirely by itself. The other is associated in operation with other independent stores. Examples of the latter group are the Associated Merchandising Corporation, and the Cavanish Trading Corporation.

Chain Stores. This group also has two subdivisions. Both are centrally owned. The first is distinguished by associated operation, such as Gimbel's and the Hahn Stores, the second by central operation, such as Sears, Roebuck & Co.

As one of the conclusions from the data published in the 1929 edition of department store operating expenses by the Harvard Bureau of Business Research is found the following:

Comparison of centrally owned and independently owned department stores in each of the three divisions indicated that the former commonly operated with higher expense percentages than the latter. For the so-called chains with sales less than \$2,000,000 relatively large losses were sustained, 2.4 and 1.3 per cent of net sales for small and medium-sized stores, respectively. Similar stores with sales of \$2,000,000 or over were more successful, securing profits typically amounting to 0.7 per cent of net sales.

Small and medium-sized and independently-owned stores appeared to have lower total expenses when doing some group or central buying than when they did not use this method of purchase. Such firms either broke even or showed a slight profit. Large independently-owned stores, on the other hand, operated with lower expense and higher profit when not doing group or central buying.

Types of Stores. Stores are classified according to type as well as volume. There are promotion stores, prestige stores, and stores in between for which no name is generally accepted. The elements by which stores are distinguished are the following:

Price. Some stores develop a successful business on price appeal alone. Advertising and display emphasize the unusual value, the bargain, the extraordinary savings. Merchandise becomes a secondary feature; price is all important. Many stores are represented in this classification.

Quality. Quality is found where stores have insisted on certain maximum standards for merchandise. A generous adjustment policy usually accompanies rigid merchandise standards.

Service. Different forms of customer service distinguish some stores from others. Delivery systems, credit departments, adjustment departments are common. Shopping garages, free gift wrapping, theater ticket reservations,

and travel bureaus distinguish those stores which pride themselves on customer service. The perfection of this service and the work of the salespeople tell whether the store is to be marked as a service store.

Fashion. No matter what the type of store, fashion rightness is sought by all. Inexpensive merchandise quickly adapts itself to fashion changes. Some stores are more alert than others in sensing the trend and in having the latest fashion in stock. To anticipate the wishes of store trade is the art of merchandising.

Assortment. Whenever the unusual in size or color range is desired, there are usually one or two stores in every city to which customers turn. These stores have a policy of complete stocks. The opposite policy is to concentrate on fast-selling items.

The Clientele. Stores may also be classified according to the income groups which they serve. Only rarely are stores successful in serving more than two adjacent income groups. Quality and service, quality and style, price and style, are found together, but there are very few successful stores that aim at once at the high, medium and low price trade. The difficulty is to recognize the groove in which the store will operate most smoothly and show the greatest net profit.

Organization. Typically, department store activities are organized around four divisions—merchandise, publicity, control, and store management. Each division has its top executive, who reports to the head of the store. In smaller stores one executive may be responsible for the operation of more than one division; for example, the duties of control and store management may be combined, or of publicity and merchandising. In cases in which the head of the store takes counsel with divisional managers on general as well as specific problems, decisions so reached represent the opinion of general management.

The Merchandise Division. The function of the merchandise division is to buy and sell at a profit. The duties of the merchandise manager are:

1. To manage a group of selling departments.
2. To know market conditions.
3. To develop resources.
4. To control all purchases by an established budget.
5. To develop new selling lines and methods.
6. To follow up on slow-moving merchandise (sometimes called excess merchandise).

The Publicity Division. The publicity division includes all forms of store advertising. Newspaper advertising, direct mail, window display and public relations are all included under publicity. The function of advertising is closely allied with merchandising.

The Control Division. The control division includes all accounting and financial operations. The duties of the controller are expressed in

The receipt and disbursement of money.
The supervision of credit, collections, and audit.
The operation and control of budgets.

The significance of this position is not in the accumulation of statistics or records but in the interpretation of details which may be of general and far-reaching importance.

The Store Management Division. The functions of the store management division are more diversified than those of the other three. Because customer service is the principal problem of the store manager (also called general superintendent), he must be sure of the performance of every one contributing to the quality of this service. All personnel duties are usually under his control, and he is responsible for the efficiency of all employees, as well as for their morale. He superintends the purchase of supplies, protection against theft of merchandise by customers and employees, and maintenance and repairs. Successful operation of the receiving, packing and delivery departments are usually added to his work.

Problems of Merchandising. The function of merchandising is to buy and sell merchandise at a profit. Net profit depends in part upon the skill used in keeping the proper margin between the cost of selling merchandise and the selling price, and in part on the skill in keeping expenses in line.

Much of the guesswork which formerly existed in merchandising has been supplanted by facts. The sales plan has taken the place of snap judgment. The logic from accumulated data guides the instinct which at one time staggered unaided.

The science of merchandising, whether in a large or small store, is found in: Merchandise that is fashion right in the right quantities and assortments. Stock distributed in that proportion to sales which allows the entry of new merchandise evenly and regularly.

Merchandise that represents the character of customers of the store and is priced at the amount which they are willing to pay.

Advertising that brings to a store its daily share of buying customers.

Display that attracts customers and induces them to buy.

Service, in every division of labor, that expresses intelligence and training.

These are the easily recognized ear-marks of good merchandising, but in addition, horizons are being continually broadened with experiments in new lines of merchandise that will attract groups of customers comparable to the present store trade. This is called creative merchandising, and is usually profitable. As a merchandising problem it may be explained by the following illustrations:

Profitable merchandising swims downstream, with the current of consumer demand. The creative part of merchandising is the part played by a merchant when he discovers, with originality, precision, and imagination, which way the current is flowing. If hose at \$1.65 are selling faster than hose at any other price, that is the price which the creative merchant promotes. If radios are getting smaller, the merchant will not push the big ones; and at the same time he will provide small good-looking end tables on which to put the more fashionable radios. When reptilian leathers decline in popularity the creative merchant will stop buying them except in small quantities and will experiment with new lines to discover if he can what new leathers are taking their place. When a Lindbergh bridges two continents, alert merchants promote the symbol of his achievement in a goggled helmet for children.

Whenever a crowd gathers around an item of merchandise, the creative merchant brings that item to his customers in increasing quantities and throws the weight of promotion behind its assured acceptance.

The Merchandise Budget. The merchandise budget is a sales and buying plan which steers the buyer along the pathway of better buying. No careful buyer enters the market without an analysis of just what merchandise his customers are demanding and the amount of merchandise necessary to bring his stock purchases to the planned figure.

His first step is to budget or plan the sales. This is usually done in advance for a six months' period. By establishing sales objectives based on past experience and current business trends, it is possible to determine the amount of stock that will be required week by week and month by month. This estimate also indicates the amount of capital necessary for the same period. Careful planning of the sales and stocks for a department is necessary for the most satisfactory rate of stock turn. This is dollar control.

It is not only necessary to plan the dollar amount of stocks to be carried but the different price lines, colors, sizes, and other classifications, in relation to sales. Here again departmental conditions are observed—the volume trend, the fashion trend, consumer demand, and the stock on hand. This is called control by units, or unit control.

It is not an easy matter to determine the proper balance between stocks and sales. As a means of assistance, whatever form of unit control a store wishes to use should be brought into play to see that buying for the different merchandise classifications is carried out.

The formation of the merchandise budget takes into consideration such factors as planned sales, planned stocks, planned mark-downs and planned initial mark-up. The buyer receives from the controller's office the budget form to be made up for the coming season. It contains the experience for the same season last year, which is a guide for the buyer's planning. The beginning and the end of budgeting is the inventory figure.

The accompanying forms illustrate a merchandise budget and an outstanding order sheet which is used with it. (See Figs. 2, 3 and 4.)

First, the amount of sales is planned, at which time every force contributory to success or defeat is weighed. Changes in department location, expansion, contraction, style changes, local competition, comparison with similar departments in other cities, the growth of the store as a whole—these and other considerations influence the dollar amount of planned sales.

When the planned sales have been decided upon the right dollar amount of stock is planned to maintain these sales.

Unless initial mark-up is planned to include planned mark-downs, the gross margin may fall too low to allow a satisfactory net profit.

One of the outstanding advantages of a planned merchandise budget is found in the planned mark-down percentage. Formerly mark-downs were loosely taken. Because they are such an important factor in determining net profit a successful buyer scrutinizes the reasons for each one to prevent its recurrence. Whether the fault lies in imperfect merchandise, wrong fashion, inadequate selling, badly timed promotion, or poor advertising he plans to avoid mark-downs on that same score for the season ahead.

The planned initial mark-up is affected not only by mark-downs but by expenses and inventory shortages. When these three items are deducted from the total planned initial mark-up, the result is the planned net profit. This figure, the planned initial mark-up percentage, is often prepared by the merchandise manager, in cooperation with the buyer. Thereafter it becomes a standard percentage which the buyer applies to all his purchases. A common practice is to subtract the mark-up percentage from 100, divide the cost price by the remainder and multiply by 100, in order to get the retail price. For instance, hosiery is offered at a cost of \$12.00 per dozen pairs. With a mark-up of 40 per cent, subtract 40 from 100 and divide \$12.00 by the remainder, 60, which gives 20 cents, times 100 gives \$20.00. This gives a retail price of \$20.00 a dozen, or \$1.67 a pair.

Department										
	At Retail		At Retail		At Retail				At Cost	
	Received last year	Sold last year	Estimated sales this year	Actual sales this year	Planned stock this year	Actual stock this year			Open to buy this year	Received this year
January										
February										
March										
April										
May										
June										
Total spring season										
July										
August										
September										
October										
November										
December										
Total fall season										
Total year										

FIG. 2.—Merchandise budget form.

Open-to-Buy. With a merchandise budget in operation, a buyer is able to tell at any time how much he can invest in additional merchandise. This is called open-to-buy. The open-to-buy figures are planned by the control department by weeks and months. In this way the buyer knows just how much he can purchase before he goes into the market. Formerly buyers knew only the total purchasing amount, but recent developments require a more precise knowledge of the proper distribution of units of merchandise, by classifications of size, color, material, etc.

Unit Control. Unit control is the method by which creative or downstream merchandising is accomplished. It is simply a way of finding out, and using,

[illegible]

FIG. 3.—Stock and order sheet.

the indexes of customer demand which are already available in the sales records of the store.

When the retail method of inventory was adopted, it became possible to control buying by means of the physical units of merchandise as well as by dollar amounts. Records of sales are analyzed in various ways, for instance by size, color, material, manufacturer, style, and especially by price lines.

This analysis informs the buyer in what proportions he should arrange his stock. If 35 per cent of his sales for the period of the analysis were made in pastel colors (assuming that he had offered a complete assortment of colors), then his new stock should contain approximately 35 per cent of pastel colors. If his trade is such that 20 per cent of his sales were made in outsizes, he should buy so that his stock will be arranged accordingly. If, in the rapidly changing fashions of the dress department, his sales ran high in novelty crepes, he should notice how far away the end of the season is and should estimate how many of these dresses he can continue to stock for his public.

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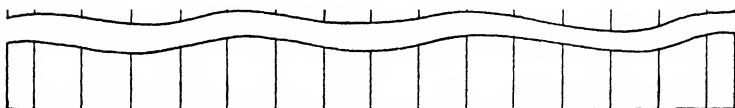


FIG. 4.—Orders outstanding.

In many departments fashions change too rapidly to permit a rigid use of unit control. But the danger is usually that the buyer does not make sufficient use of the figures which are available to him, partly because he does not understand them, partly also because he is afraid that the controller, who collected the figures, is using them as a check on his judgment of demand. This attitude is mistaken. The controller's interest is in precise and profitable merchandising.

There are many unit control devices. The simplest form is a separate card for each type of merchandise. Source information, such as the name of manufacturer, price, and quality of the item is recorded. A perpetual inventory card can be made by listing the amount of merchandise on hand, additional purchases, returns *from* customers and *to* manufacturers and the amount of sales. The balance of merchandise on hand is always available for quick reference when a control of this kind is kept.

A more recent technical development in unit control is used at Kaufmann's, in Pittsburgh, in the ready-to-wear departments and in the Annex, and forms a part of the system of central records. In the latter plan the merchandise is marked by means of the perforated price ticket shown in the illustration.

At the time of sale the price ticket, together with a customer's card and the salesperson's card, is placed in an electrical transmitting machine and at a distant office the entire transaction is forthwith punched automatically on a Hollerith card, by means of a receiving device. The following are illustrations of the forms used in this system of unit control:

Perforated price ticket. (See Fig. 5.)

Customer's card. (See Fig. 6)

Salesperson's card.

KAUFMANN'S
Fifth Avenue Pittsburgh

DEPT. NO.	SIZE	PRICE
194	124	69.00
194	220	69.00

KAUFMANN'S

KAUFMANN'S

DATE OF SALE

This Tag Must Accompany Merchandise Returned For Exchange or Credit

KAUFMANN'S

FIG. 5.

Audited figures for these departments are available shortly after the store closes, and the analysis by different classifications is available on the following day. Supplementary machines even make out bills from the Hollerith cards. This is the highest mechanical development available for unit control today.

The plan and the installation may be expanded to departments other than ready-to-wear, but as its expansion proceeds to departments where low-price units prevail, its relative cost increases and its value therefore diminishes.

Its real efficiency, however, depends on the use made of it by buyers and merchandise managers.

Controlling the Merchandise Budget. The preparation of the merchandise budget is one test of the buyer's ability. If he has made mistakes in the past he will try to eliminate them; he will make an effort to duplicate successes. When he completes his planned budget he discusses it with the merchandise

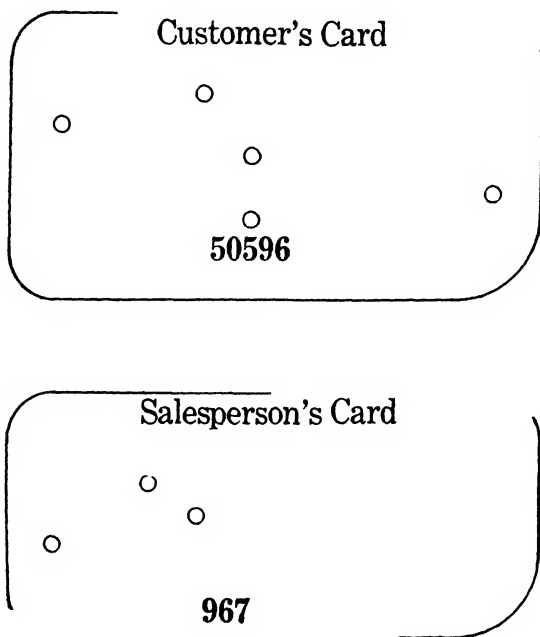


FIG. 6.

manager. Changes are agreed upon. The controller interprets from department statistics tendencies which should be followed up or avoided. In its final acceptance the merchandise budget represents the pooled judgment of the best minds concerned with the problem.

Once in operation the buyer is guided by reports from the controller's office indicating the position of the department in relation to its budget. The buyer's weekly report is a common form in many department stores.

The merchandise budget is as valuable as its planning. The nearer planned figures and actual figures are in accord, the better the operating result. A

DEPARTMENT _____ WEEK ENDING _____				
END OF THIS MONTH'S PLANNED STOCK-RETAIL		ACTUAL STOCK THIS WEEK-RETAIL		
DOMESTIC ORDERS OUTSTANDING-RETAIL				
NET MARK UP ON SALES TO DATE	THIS YEAR		LAST YEAR	
RETURNED SALES				
NET SALES				
SELLING SALARY				
NON-SELLING SALARY				
SHOP SALARY				
NUMBER OF SALES THIS WEEK				
NUMBER OF SALES YEAR TO DATE				
OUTSTANDING FOREIGN ORDERS AT RETAIL				

THIS REPORT MUST BE RETURNED TO STATISTICAL OFFICE WITHIN ONE WEEK FROM RECEIPT

PLEASE TAKE UP ANY QUESTIONS WITH THE STATISTICAL OFFICE

FIG. 7.—Buyer's weekly report.

budget is only a guide. It should be elastic enough to allow for all changes in fashion and shifts in customer buying, and is frequently adjusted to current trends by the buyer and his merchandise manager.

Price Lines. As unit control developed in stores, retailers began to hear more and more about price lines. Price lining is a special aspect of unit merchandising. No matter how many prices are offered in any line of merchandise, the largest volume of sales will center around three or four prices. A store could offer men's suits with a long range of prices beginning at \$25 and growing by five dollar intervals to \$100. Thus it would have sixteen prices. But most of the business would be done at say \$25, \$40, and \$65, and the rest of the merchandise would stay on the racks.

This situation still exists, although it is disappearing. The many prices confuse the customer and result in large inventories and low turnover for the store. The salesmen have difficulty in explaining the differences in value between suits priced only \$5 apart.

E. A. Filene, in his "Model Stock Plan," advocates using only three price lines. Myron Silbert, in the "Buyer's Manual," suggests four.

The unit control analysis shows the prices around which the sales cluster. These prices, modified sometimes by a trading-up or a trading-down policy, are established as the price lines of the store, and 85 per cent of all merchandise in any given class is purchased to sell at one of the established price lines. The remainder of the stock can be purchased for experimental work in determining new demands in novelties.

The advantages of price lining are quicker turnover and greater net profit; less time needed for the buyer to select merchandise and train salespeople; a greater pulling power for advertising, because it can give a clearer picture of values; reduced operating costs in the marking room; and greater than any other advantage wide assortments in the chosen price lines, so that customer goodwill can be kept at an even grade by being able to find just what is wanted.

The Model Stock Plan. In every store, in every department, some lines of merchandise move more quickly than others; some sizes are in greater demand; some colors are in fashion for the moment. It is the buyer's responsibility to maintain as completely as possible the right colors, sizes, and assortments of fast moving merchandise. Obviously the proper price lines must be maintained as well. The model stock plan came into being through this need and where successful it has been the result of careful merchandise supervision.

As a means of building up his model stock plan a buyer should be as close to customer demands as possible. By observing the trade during the busy hours of the day, by training salespeople to report customers' preferences, and by using an accurately maintained want slip system, the buyer can have his finger continuously on the pulse of the trade. In this manner "duds" and slow-moving merchandise can be eliminated. But no amount of records can interest the department manager in promoting slow-moving goods nearly as much as handling those items physically.

A model stock plan needs constant supervision and revision. If no mistakes were made a model stock would be comparatively easy to organize and maintain. Many times the actual stock has become obsolete through

lack of follow up and weeding out, or because of too slow experimentation in new lines. The model stock plan is continuous, never ending, and should be developed around the lines bearing the greatest profit returns.

In the "Buyer's Manual," the following steps are given as a suggested procedure in setting up a model stock plan:

1. Divide the department into classification of subdepartments.
2. Divide each classification into individual items.
3. Establish the price lines to be carried in each item and set few price lines (these first three steps give a complete directory or "roll call" of the merchandise in the department).
4. Set the quantities of each price considering the time for delivery and turnover of each item.
5. Study the dollar amount in each classification (the total of all price lines in each item) to see that it is in line with its proportion of the total department's volume.
6. The quantity of each price line next should be subdivided into materials, sizes, colors, and styles.

After a model stock plan has been installed, efficient but simple methods should be used to keep it alive. Based on the rapidity of turnover and the time element in getting merchandise from the manufacturer definite minimums and maximums of stock levels must be set. Reordering in staple lines of merchandise can be carried on with no more effort by having well-trained personnel. The relationship between the sales department and reserve stock can be maintained in the same manner.

Embodied in a model stock plan is the unit control of size, color, material, style, and manufacturer. This includes a record of sales items by price. Where unit control is not practiced frequent inventories are taken. By comparing the inventory with the model stock the buying division is immediately informed of heavy stocks and also in which lines purchasing should be developed.

A model stock does not necessarily mean a large stock but in all lines the right proportion to sales. Rapid turnover in a few best sellers with other lines of the remaining stock stagnant or at low ebb will not create net profit. The evenness of turnover for the merchandise as a whole determines a successfully merchandised stock plan.

Turnover. Turnover is the constant changing of merchandise into cash and cash into merchandise. Whenever goods are purchased and sold the stock has turned. So has the capital invested. The more often stock is turned, provided an adequate mark-up has been maintained, the more often profit is earned. Likewise capital can be released to help out in other departments.

Because stock is never completely turned at once, turnover is the ratio of stocks to sales for any given period. The rate of turnover can be determined by dividing the net sales by the average inventory of stock at retail prices, or by dividing the net sales at the cost of the merchandise sold by the average inventory of stock at cost prices. The result will be the same in either case. The method used is determined by the store's accounting system; standard practice is the retail method. If a department sells merchandise at

retail amounting to \$50,000 for a period of six months, with an average stock of \$10,000, the rate of turnover is five times for the six months.

Relation of Turnover to Profits. Rapid turnover is efficient use of capital. If a buyer invests \$20,000 in merchandise and a stock turn yields a profit of \$1,200 he has earned 6 per cent on the investment. By turning his stock twice the profit is increased to \$2,400 or the yield 12 per cent. Operating costs will be increased in part but will not be doubled, for some expenses, such as heat, light, and rent, remain the same.

Disadvantages of Too Fast a Turnover. If all classes of merchandise in a department turn at the same high rate, the result is satisfactory. This is not, however, a common occurrence. Too frequently the buyer selects a small amount of merchandise which moves rapidly. Constant reordering adds expense to the cost of selling and results in the loss of goodwill because desired merchandise is not on hand. If the buyer ceases to order, hoping the balance of stock will move, volume drops in the slow process of forced or upstream selling.

RATES OF STOCK TURN FOR VARIOUS SIZES OF DEPARTMENT STORES
From the Harvard Bureau of Business Research

Net sales of less than \$500,000 (1929)

	All firms	Less than 2.0 times	2.0 to 2.9 times	3.0 times and over
Times a year.....	2.4	1.6	2.4	3.6

Net sales of from \$500,000 to \$1,999,000 (1929)

	All firms	Less than 3.0 times	3.0 to 3.9 times	4.0 times and over
Times a year.....	3.3	2.5	3.4	4.6

Net sales of \$2,000,000 or more (1929)

	All firms	Less than 4.0 times	4.0 to 4.9 times	5.0 times and over
Times a year.....	4.2	3.2	4.2	5.7

Problems of Advertising. Two sets of forces are continually at work to sell merchandise: the external force of advertising as found in newspaper, direct mail, radio, billboard and street car advertising before the customer enters the store, and the internal force of good salesmanship when customers come in to

look and remain to buy. Advertising is as essential to the average department store as light and space. In whatever form it takes, the whole purpose of advertising is to create an interest in the merchandise and an urge on the part of the customers to go to the store to see it.

Two recent tendencies in advertising are important. The first emphasizes value in use, that is, advertising the merchandise as it will appear in the customer's home, or as she wears it, rather than stressing some difficulty involved in manufacturing it or the splendor of its source. An example of this is taken from the chatty advertisements of R. H. Macy & Co.: "High chairs at low prices . . . A Windsor back, maple-finished colonial chair that gives a baby that Early American feeling." The second is closely related to the first but stresses the added beauty in the home, or the improved appearance of the customer, which is to result from the merchandise in question, always using an emotional appeal. For instance Saks Fifth Avenue says: "Pearls, rose-tinted, the classic and most flattering of all jewels." The success of the advertiser is measured by his ability to make the merchandise seem real and interesting before the customer actually sees it.

Cost of Advertising. The cost of advertising for stores having net sales of less than \$1,000,000, according to reports of the Harvard Bureau of Business Research, was 2.1 in 1922. This compares with 2.5 in 1929. For stores with net sales over \$1,000,000 the cost was 2.9 in 1922 and 3.4 in 1929. This increase in advertising cost, which applies to all stores, is due to the pursuit of volume which has been the great driving force in retailing during the past decade.

The amount of money which a store spends for advertising depends on the sales volume, on the type of store, on the kind of merchandise carried, and on store location. Some kinds of merchandise are more expensive to advertise than others. Staple and convenience merchandise must maintain a low advertising cost while fashion merchandise, such as ready-to-wear and costume accessories are usually subjected to greater advertising expense. In some nationally advertised lines, such as radios, mattresses, and washing machines, the manufacturers subsidize advertising costs during store-wide promotions and anniversary sales.

Advertising Budget. In order to supervise the ratio of advertising expense to sales a control in the form of an advertising budget is set up. Every store hopes to get definite returns for every dollar it spends in advertising. Unusual weather conditions, poor advertising, the wrong choice of merchandise, and other factors may prevent the expected result. Some stores maintain a follow-up on returns for different kinds of advertising. Such information determines the allotment of space to different lines.

The amount of advertising expense may be determined in part by local competition among different lines and in part by arbitrary allotment of advertising expense to planned sales. In many cases the cost is definitely set up as a fixed per cent of sales based on previous experience. Adjustments are made to meet local conditions or to swing into a new and rapid merchandising promotion.

Like the merchandise, expense and other budgets, the advertising budget covers a six months' period. It is developed through daily and weekly

schedules by estimating costs which are based on advertising plans. Holidays, local anniversaries, and any events around which advertising can build a selling campaign must be factors of the plan. Fashion advertising is always in advance of the season, allowing opportunity to feature individual models usually starting at higher prices. When the season is in full swing sales momentum is carried to medium prices. By this method the right proportion of advertising expense is allotted to closing out seasonal merchandise at low or bargain prices. The trend not to advertise clearance merchandise is becoming more and more apparent.

DEPARTMENTAL ADVERTISING BUDGET FOR SIX MONTHS' PERIOD
Department _____

Month	Expense last year	Estimated expense this year	Actual expense this year	Over (red), under (black)
January				
February				
March				
April				
May				
June				
Total, spring season				
July				
August				
September				
October				
November				
December				
Total, fall season				
Total year				

Newspaper Advertising. Newspaper advertising is used most commonly by all department stores. Rates are based on the amount of lineage used during a year and preferred location depends on the amount of daily space

in that issue. Because the second and third sheets of a newspaper are believed to be read by more people than the pages that follow, some stores endeavor to identify themselves with the public by always using those pages. Likewise right-hand pages and the first and last pages of sections are regarded as choice positions because they are seen with little effort.

Direct Mail Advertising. Direct mail advertising is used to inform the clientele individually of important offerings. This method is being developed more intensively by some stores. Different kinds of merchandise are promoted among selected customer groups who either have indicated interest by previous purchases or who are desirable as prospective purchasers. Names are obtained from mailing lists of various organizations, directories, and school lists. Some lists are highly specialized for merchandise appeal, such as Boy Scouts, automobile owners, new home owners. In comparison with newspaper advertising direct mail is a more expensive form but it has the advantage of being placed in the hands of a definite number and class of individuals.

Other Advertising Media. Radio, street car signs, billboards, electric signs, and other types of advertising are of less significance. Of these, radio has hitherto unmeasured possibilities, for few measurements of radio advertising have been taken. In some instances it has been discontinued because the expense did not warrant the return; in other cases the stores owning and using broadcasting stations appear to have been satisfied with the results.

What to Advertise. Advertising is the reflection of store character just as is the opinion of any individual. If a man can be judged by what he reads, a store can be judged by its advertising expression.

All stores have one thing in common to talk about, and that is merchandise. But the advertisement expresses the type of store. On the one hand, price appeal and dollar amounts in black type dominate copy and cuts; on the other, the ideas and illustrations emphasize fashion *motif* and detail. Again, quality is the appeal, or the service and conveniences by which the store excels others.

Institutional advertising sells indirectly by pointing out the store's position in the community, its position of leadership in fashion promotion, its age, its high employee morale. It is frequently believed that institutional advertising for department stores is egotistic and is appreciated more by the owners than by their customers. Another view is that every merchandise advertisement has an institutional character, inasmuch as it contributes to the general impression of the store in the mind of the public.

Advertising layout or form should be attractive so that it is good to look at. The use of boxes, borders, cuts, white spaces, and copy should blend harmoniously. The typography should be carefully worked out, using the most delicate type faces to advertise feminine apparel, the stronger type faces for merchandise for men, and the faces in between for neutral merchandise like furniture. It should tell the facts straightforwardly and in enough detail to excite buying interest. It should be timely, taking advantage of current news interest. Above all else it should be wholly truthful. Recent surveys indicate a growing disbelief in the public mind regarding the tremendous savings continually offered. Care should be used to avoid overstatements.

Problems of Store Management. The problems of store management appear as receiving, checking and marking, delivery, customer service, maintenance and construction, personnel activities, operation, protection, and purchasing of supplies. Complicated situations arise from any one of these divisions of labor, but the store manager's major tasks are service and personnel.

To control the machinery of human relations between the customer and employee successfully requires an executive of greater capacity than is often recognized. The successful store manager is a well-rounded individual. He has the buying instincts of a merchant and the prudence of a controller for he must keep the store well for the customers without spending too much money. With an engineering sense of exactness he determines the right and wrong of the store's physical appearance, and prevents store system from becoming complicated and ineffectual. He sees the store objectively as a customer and subjectively as an operating executive. And with all that he has the patience to understand and like people.

Receiving, Checking, and Marking. The receiving of merchandise, checking it for quantity and marking the retail price is an operating responsibility of the store manager. The amount of space available and the number of freight elevators may determine the location of the receiving and marking rooms. In some stores they are located in the basement and in others on the top floor. Bulk merchandise, in carload shipments, is frequently delivered to a warehouse.

After merchandise has been signed for, opened, and examined, it is checked against the invoice. Two systems are in use, the open and blind check.

Open checking is a comparison of quantity and kind of merchandise with the amount and description on the invoice.

In blind checking all merchandise received is listed. Later, invoice clerks compare the lists with invoices. The latter system is being more generally used.

Because garment sizes vary some stores have adopted standard models for pre-sizing as many ready-to-wear purchases as possible. Inaccuracies of this sort, as well as imperfect merchandise, have been detected before customers were inconvenienced. Pre-sizing and inspection are usually a part of receiving room routine.

With incoming shipments such traffic problems as the form of transportation to use, the cheapest or quickest routes, and claims on short shipments or damaged goods are bound to arise. The return of merchandise to manufacturer, and supervision of the warehouse are also operating functions of the store manager.

Merchandise is marked by string tickets, gum labels or pin tickets. String tickets and gum labels are put on by hand as well as interlocking pin tickets which are attached to such merchandise as millinery. Price tickets contain such information as retail price, manufacturer's number, season letter or date, and size.

Wrapping, Packing, and Delivery. As merchandise is sold, it must be either attractively wrapped for the customer to carry, or securely packed for delivery to the customer's address. Smaller packages are wrapped at bundle desks by

young girls called inspector-wrappers. They inspect merchandise for imperfections and examine the salescheck and price tag for errors.

Parcel collectors relieve bundle desks of packages which are to be delivered. All packages not too large which have been wrapped for delivery are dropped down spiral chutes or taken down merchandise elevators to the delivery department.

In larger stores, a central wrapping room serves the entire store in preparing merchandise for delivery. Street-floor departments are particularly in need of this type of wrapping service. As an alternative, merchandise can be distributed to bundle desks in less busy departments for wrapping. During store-wide sales, this service cannot be depended upon.

In the race among stores to excel each other, gift wrapping has developed as a gilt-edge type of customer service. Wrapping and packing cost for ordinary bundles extends from 3 to 15 cents per unit, depending on the size of the article. Gift-wrapping costs are known to extend from 10 to 75 cents, depending on the quality of the box, cut paper, wrapping paper, and ribbon used. Wage cost is higher in the latter case, because of the care and skill necessary to do an acceptable piece of work.

The packing department can be the cause of many delivery complaints if improperly organized and managed. Engineering precision may be seen in labor-saving, time-saving, and well-lighted packing rooms. Waste motion is reduced to a minimum; waste in packing supplies is prevented by the use of a minimum number of box sizes. Boxes, excelsior, filling, and cut paper, salvaged from the receiving room, reduce packing expense. Improved time schedules and wage and bonus payment plans for packers have contributed to the efficient management of this department.

The National Retail Dry Goods Association, in its 1931 report of the Store Managers' Division, has provided a valuable check list of simplified sizes of wrapping and packing supplies. This operating expense in a store can be reduced by comparing its list of supplies with the recommendations which this report contains.

Retailing for April 25, 1931, reports that the Jordan Marsh Company saved \$110,000 in 1930 packing and delivery costs. This was accomplished by "an extensive relocation of wrapping stations, a change in the mechanics and routine of the central wrapping, the organization of a plan for measuring production of the packers, a more scientific analysis of inside delivery and a replanning of delivery routes."

Prepacking, or factory packed merchandise ready for retail distribution, has been a recent development. China and toys are types of merchandise which lend themselves to this arrangement. This method eliminates dual packing at the factory and store, cuts down receiving- and marking-room costs, speeds up delivery, reduces customer complaints on volume merchandise, and is obviously a saving in operating cost. Only samples of such merchandise are shown on the selling floors.

Free delivery service is generally expected of a department store. In order to build volume, stores have found it necessary to reach as many suburban districts as possible. Deliveries are common for a radius of 20 to 40 miles from the store. A large store can operate its own delivery organiza-

tion. In addition, parcel post and local express companies supplement store delivery. The small store, with many jumps between deliveries over a wide radius, must confine its own delivery system to localities in which its clientele is most thickly settled.

Cooperative and consolidated delivery systems are separate organizations which deliver merchandise for a group of department stores. Under the cooperative plan, two or more stores operate a delivery system which eliminates duplication of cost for the same effort. The Associated Retailers, Delivery in St. Louis, owned by four leading department stores, is an example of cooperative delivery. The Eleto Company in New York, which formerly served Lord & Taylor and James McCreery & Company, is another.

Consolidated delivery systems are independent organizations which deliver for department stores under contract. The United Parcel Service Company is an outstanding example. It handles all the deliveries for the important stores in Portland, Seattle, San Francisco, Los Angeles, and other western-coast cities. Recently, it purchased the Eleto Company of New York.

Some recognition of the delivery problem is apparent in the number of bundles handled. In 1930, the Jordan Marsh Company delivered over 3,000,000 bundles. This figure does not include furniture and large house-furnishings articles.

From December 1 to December 24, 1930, Macy's wrapped, packed, and delivered 1,953,647 items. This figure includes furniture as well as smaller pieces.

Unit delivery costs vary in different cities. In Pittsburgh and Seattle, steep hills add to operating costs. More than one delivery a day affects the total cost. It can be said generally that, for the country as a whole, the unit cost is close to 15 cents. According to the report of the Bureau of Business Research of Harvard University, the delivery expense to percentage of sales for department stores with net sales of \$2,000,000 or more is 1.25.

Customer Service. Customer service depends upon the shopping conveniences which the store offers and upon the personnel who represent the organization. Department layout, elevator service, ventilating systems, adjustment bureau, telephone order service, and delivery are some of the conveniences upon which a store builds goodwill. The following list indicates the wide variety of services offered. Not all are used by any one store, although many of the larger stores offer the greater part.

List of Shopping Conveniences

- Fashion magazines.
- Printed matter, stuffers, on services.
- Telephone order board—free toll service.
- Charge accounts.
- Garage—bus to store, chauffeurs' stand.
- Door service.
- Umbrella checking at door.
- Post office.
- Telephone booths.

Telegraph office.
Travel bureau or Ask Mr. Foster.
Paris office.
Escalators.
Refrigeration for ventilation.
Exhibitions.
Lectures.
Lost and found.
Parcel room.
Rest room and waiting room.
Drinking fountains.
Appointment book.
Santa Claus.
Gift wrapping.
Personal shopping bureau.
Fashion service—models, fashion parade.
Budget service.
Medical treatment.
Lost pocket book—money loaned for carfare.
Interior decorating.
Delivery service.
Valet service for men.
Reminders for anniversaries, birthdays.
Keeping store open for men in evening.
Returned goods.
Alteration rooms.
Cutting and fitting.
Hemstitching and picoting.
Hosiery repair.
Bow making.
Stamping linen.
Dry cleaning.
Repair work of all kinds—jewelry, rug, leather, etc.
Beauty salons.
Children's barber shop.
Men's barber shop.
Fur storage.
Restaurant and tea rooms.
Children's menu.
Children's parties.
Bridge parties.

Operating expenses have shown such a constant upward rise in the last few years that the trend to reduce the number of customer services is noticeable.

Layout. Careful attention must be given to the use of space and the layout of departments. It has been observed that customers turn to the right when entering a store and after a short time turn to the left. To meet this natural circulation of customers diagonal traffic lanes are a feature in some stores and are on the increase. The more conventional treatment consists of long parallel aisles with tables at right angles.

Merchandise which carries the greatest relative volume gets the preferred position on the floor. Appearance must be kept in mind and only the more attractive merchandise given prominent display. Convenience merchandise

is easily accessible, rarely changes position, and is usually on the first floor, which is devoted to quick selling merchandise. The second and third floors are usually given over to ready-to-wear, and the upper floors to more bulky items such as furniture and home furnishings.

Although the tendency has been to merchandise women's wear on the second floor and misses' ready-to-wear on the third, the trend is to locate all coats, both women's and misses', on one floor and all dresses on another.

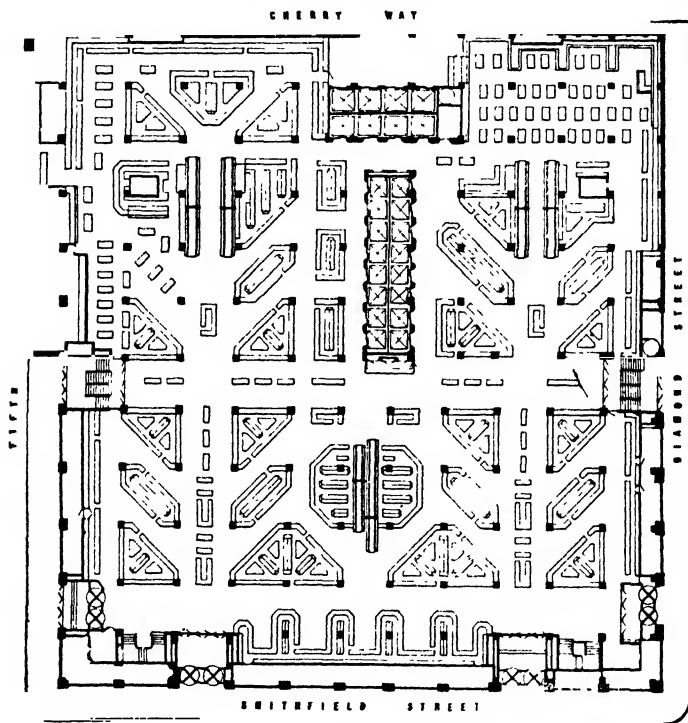


FIG. 8.—First floor plan.

This allows for closer interselling to customers whose size is on the border line.

Elevator Service. Quick and comfortable transportation from floor to floor adds to the value of every floor above the street. To determine whether a store has a sufficient number of elevators is an internal traffic study which must not be neglected. A constant distribution of traffic is maintained when cars are lifted on even schedules. This is the duty of the elevator starter. In some stores timing by electric signals has speeded up this service.

In spite of the multitudes of customers moved from floor to floor accidents are almost nil. This is due to constant supervision of machinery and care used in training operators not to overload cars.

Escalators are an aid to traffic flow. While formerly they were used from the first to second floors, more and more this service is being extended to include all floors. In some stores as many as three sets of escalators are distributed across the building. Supplementary escalator service makes shopping almost as easy on one floor as another.

Ventilation and Refrigeration. To operate successfully department stores not only want but need crowds. One of the problems that large numbers of people create is that of ventilation. Fresh air is used up quickly. Customers become fatigued and restless. Salespeople grow dull and lifeless. The problem exists in summer and winter.

Many stores have already installed circulating air systems. During warm weather air is washed, cooled, and circulated. In cool weather fresh warm air is kept in motion. At present this plan is confined to basement and street floor levels. As one of the advantages that a large store offers over a small one this customer attraction will undoubtedly be extended.

Adjustments. In many cases store managers have given little or no attention to the adjustment department. This is partly the result of trying to run the department too economically. The adjustment manager is often a generous host who gives the customer what she wants because both he and she know that she will get it anyway. Then he forgets about it.

A change in the policies of this department is being anticipated by carefully managed stores. To the adjustment office flow problems which have come from individual mistakes, from bad store policy, or from no policy at all. The position warrants the rating of assistant store manager. In a small store the adjustment manager may be the understudy for the store manager. The newer interpretation of this position is not only to adjust customers' complaints but also to utilize them in correcting mistakes and in revising store policies and procedures.

Personnel. As an integral part of customer service the personnel of a store constitutes the second major problem of the store manager. A personnel department is essential to select, place, train, and follow-up whoever is hired. It is now more generally recognized that this division of labor is highly specialized and more attention is being given to securing a trained personnel staff.

One of the major difficulties in building a strong personnel for the whole store is the lack of written personnel policies. Management is usually reluctant to express itself about human relationships and often fearful of being embarrassed by previous decisions. Consequently where no policies exist, employment and training have no long term plan by which to steer constructive effort.

The remedy for this situation rests on the willingness of store management to recognize the importance of personnel administration and to follow its operation as consistently as any other function. One of the most expensive practices which department stores are now experiencing comes from high executive turnover. This is due in part to a lack of explicit personnel policies.

Buyers and other executives are hired arbitrarily by the executive offices without any reference to the personnel division. And yet for all other positions applicants are hired by definite and accepted procedures. It is clear that more care should be taken in employing for such positions as buyers whose turnover costs between \$10,000 and \$50,000.

A factor in the improvement of personnel management is proper induction into the job. Where executives are suddenly thrust into a position with no reference to the usual channels of employment and training they are obviously handicapped. They know neither the system nor the methods of obtaining assistance, and immediately mistakes of system and operation become a source of irritation and misunderstanding.

Where the rank and file are given no formal induction, due to inefficiency in the personnel organization, the employees are again left to flounder. In either case turnover is prevented only by unusual ability on the part of the individual.

A successful personnel job in a store can be measured in various ways. When a high rate of turnover is broken down into the different reasons for leaving, poor selection, inefficient training, lack of promotional opportunities, and other factors of employee well-being are brought out into the light. The morale of an organization may be high or low according to lack of interest in employee demand or the practice of minor injustices. Store managers are becoming more concerned in the quality of store morale by the adoption of well-thought-out personnel policies.

Every employee wants a chance to earn a living. Beginning wage scales should move forward as a man or woman proves his worth. Periodic salary and personnel reviews on a six months' basis meet this situation. No one has respect for the organization that underpays and it is apt to lose in community goodwill. On the other hand, there are maximum salaries for every job. A store cannot overpay and live. A low salary for a person of long service is expensive, and inefficient people discovered only after years of service are hard to discharge. The periodic review considers all these problems.

Training on the job and training for promotion are considered necessary to maintain a well organized store. Where all top executive positions are filled with sons and relatives, the middle strata is often filled with mediocre men.

The development and use of production and personnel records, both for employees and executives, are the most tangible methods of proving the worth of personnel organizations.

Problems of Control. The fourth and last major function of the store is control.

The history of a store is written into the accounts, statistics, and records that are gathered under the watchful eye of the controller. Ledgers may contain only black and red figures but in them is condensed the story of every executive in the organization.

To the controller falls the task of keeping the records and interpreting them for the executives. During the last ten years the controller has had an important rise in influence, partly because of increasing pressure to make merchandising and storekeeping precise and partly because he was often the only one in the store who understood the compilation and use of figures, the

sole instruments of precision. Control work has been accomplished most successfully in stores where the controller was not only an accountant and a statistician, but also had a strong merchandising sense.

In general there are three main divisions of the controller's work, accounting, budgetary control, and the supervision of finances.

Accounting. Under the head of accounting can be classified the following necessary store-wide functions:

Auditing.	Accounts payable.
Cash receipts.	Balance sheets.
Accounts receivable and credit.	Income statements.

In performing these functions the controller organizes his staff for accuracy and speed. If the figures are inaccurate they are of no use to anybody, and if they are too long delayed nobody in the store can make the best possible use of them.

The credit department with open accounts and collections as balancing activities is one function of the control division. What proportion of a business shall be made up of charge customers depends upon the financial structure of the organization. In some stores charge accounts run as high as 85 per cent of the total business. It is not so much a ratio of charge to cash sales as it is a question of efficient management.

The personnel of the credit department contacts daily with customers. They can act in a purely functional manner or become an important selling department of the store. The most successful credit departments are those which take every opportunity to promote goodwill for the store, whether in opening accounts or collecting outstanding indebtedness.

Recent developments in the field of electric accounting machines and control indicate that in the future accounting will be accomplished increasingly by these methods. Figures should be interpreted and presented as facts on which decisions should be made. Control, however, since it involves not only the compilation but also the interpretation and use of these facts, cannot be done by machinery, and will continue in the hands of the controller, at least until he has trained merchandise managers, buyers, and store operating executives to interpret and use the figures as well as he can himself.

Budgetary Control. By his knowledge of the facts the controller becomes the diagnostician for every division and every department. He may know little about the merchandise or the advertising or the technical details of storekeeping (although he should know a great deal). His function is to provide all divisions with information about themselves, in such form that they can use it quickly in determining their position with relation to their planned estimates, or in adding up their final results.

He works through two sets of information. One is the budget, the other the operating statement. Each division has its budget, prepared with the controller's help and advice, usually from last year's figures. Planned sales, mark-ups, mark-downs, stocks, and other information of importance are sent from the department managers through their divisional managers to the controller, where they are accumulated and used as a basis of reports, statements, and statistics.

EXPENSE BUDGET

	Planned				Actual			
	193—	Per cent	193—	Per cent	193—	Per cent	193—	Per cent
Administration expense:								
Executive expense								
Accounting office								
Credit office								
Club credit office								
Superintendency								
Employment								
Education								
Credit complaints								
General store								
Welfare								
Total								
Occupancy expense:								
Annex								
Operating expense								
Housekeeping								
Protection								
Warehouse								
Light, heat, and power								
Total								
Advertising expense								
Merchandise expense:								
Merchandise office								
New York office								
Receiving and marking								
Import department								
Total								
Selling expense:								
Departmental expense								
Bureau of adjustment								
Mail order								
Telephone order								
Foreign department								
Total								
Delivery:								
Shipping room								
Garage expense								
Total								
Grand total								

Once accepted, these budgets (for merchandise, advertising, and expense) become the guide for the next six months' operation. They are modified as the situation requires and are never regarded as more than a guide. Until

modified, however, executives are expected to live up to them, and the controller throws his influence in this direction by issuing reports of operation. Each week the executives receive not only reports of their stocks, sales, commitments, mark-up, pay roll, and other expense, in accordance with the plans, but also certain supplementary reports, such as the unit control records of sales by units or pieces, and reports of slow-moving or excess merchandise. These records permit the department executives to arrange their activities so that the plans are more nearly met, and to take advantage quickly of any special purchases of merchandise that are discovered. The weekly reports are of the greatest importance to the store manager's division, for slight fluctuations of business in either direction can, if he is ignorant of them, make serious differences to his expense showing.

In some stores the responsibility for advising department executives of their shortcomings, and for counselling them on better methods, is assigned to the controller; in other stores his function is solely to inform, not to advise.

Samples of merchandise budgets are found elsewhere in this chapter.

A typical expense form is shown on page 300.

THE CHAIN STORE

By JAMES L. PALMER, *Professor of Marketing, School of Commerce and Administration, University of Chicago*

The extensive application of the chain idea to retail distribution in my opinion has had more significant and far-reaching consequences than any other single development in the field of marketing in the last two decades. It has created entirely new problems for manufacturers, wholesalers and retailers; has forced the adoption of new methods of marketing; has compelled practically every agency engaged in distribution to exhaust its every resource to reduce its costs and improve its methods of marketing; has brought about a wholesale elimination of such agencies as have been unable to meet this new competition; has brought into being an endless number of experiments in distribution which under the old order would never have been conceived; has in no small number of cases resulted in a decided shifting of the balance of power from one agency to another; and has set many people to wondering just what the phenomenal growth of this new industrial giant, the chain store, will in the next decade or two mean to them.

Speculation as to the future of the chain store and the probable effects of its growth upon manufacturers, wholesalers and independent retailers is to be heard in every quarter. Opinions have been expressed which are as far apart as the poles. To some the peak in the expansion of the chain store has practically been reached, and it will be unable to develop outside the relatively small field in which its methods have to date been proved successful; to others, equally well informed, it is but an infant in the swaddling-clothes stage, and will in the near future acquire control of 90 per cent or even all of the retail trade of this country. Few, if any, of those who have speculated upon the future of the chain have based their speculation upon a solid foundation of fact and analysis. This will necessarily continue to be the case until

far more exhaustive studies of the economics of chain store distribution have been made than have yet been attempted.

A "chain store organization" is any group of retail outlets centrally owned and managed. Whether the group be engaged solely in retailing, or be operated by a manufacturer, wholesaler or mail-order house does not matter. We exclude, however, the vast number of organizations that are in reality cooperative associations, whose members are grouped for buying or selling purposes, but in which for the most part management and ownership are decentralized.

Factors Favoring Chain Growth. In the past decade or two a number of *social and economic developments* have favored chain store growth. These seem to me to have been as follows:

1. Increasing density of population, and the migration from the farm to the city.
2. The depression of 1921 and the stress upon economy which it created for many.
3. The increasing thriftiness of our population and the resulting emphasis on economy in the purchase of goods.
4. An improved standard of living, together with the growth of installment buying. People have come to desire many things and have been forced to economize in the purchase of each in order to secure all.
5. The growth of wasteful and expensive marketing practices, and particularly the widely prevalent indifference of small retailers toward efficient operation.
6. The mechanical perfection of the automobile and the motor truck, resulting as it has in the solution of the transportation problem both from warehouse to store and from store to consumer.
7. The decline of the personal relationship factor in trading, due largely to the character of living conditions in urban centers.

The chain type of retail organization seems often to have certain *advantages in operation* over its independent rival. Among these are the following:

1. Greater skill in management due to the greater opportunity for specialization.
2. Greater financial strength and power in buying.
3. The possibility of using certain advertising media which are not adapted to the needs of independent retailers.
4. The possibility, through large-scale operation, of developing a prestige such as the average small merchant can rarely cultivate.
5. The ability, through integration, to eliminate selling and buying costs which are inevitable when manufacturers, jobbers and retailers are separate entities.
6. The ability, through integration, to coordinate production, wholesaling and retailing, thus lowering costs.
7. Possibly the ability to secure a more rapid stock turn than can most independents. Whether this advantage is inherent in the chain type is open to question.
8. Ability to make every unit profit from the experience of every other.
9. Wider distribution of risks than has the independent.
10. Ability to dispose of salvage profitably.

A third major explanation of chain store growth is to be found in *management efficiency and the selection of management policies*. Whatever be the

underlying causes, chains have unquestionably been more intelligently and aggressively managed than have most independents. This has been demonstrated conclusively in many different directions: buying, merchandising, selection of merchandise, adaptation to market demands, selection of store locations, etc. In addition to this, chains have concentrated upon policies which point directly to net profit. They have simplified lines, reduced stocks and increased rate of stock turn. They have eliminated service frills and have been content to cater to the demands of those consumer groups whom they could serve cheaply and yet profitably. They have concentrated on volume locations and have left the second-rate locations to independents. They have added new lines of merchandise whenever there appeared to be a possibility of profit in so doing. The conglomerate appearance of the modern drug store is no doubt due in part to the merchandising vision of the chain. If I were to present in one sentence an explanation of the rapid growth of chains, it would be this: *The success of the chain store has been made possible by favorable social and economic conditions, and is directly due to greater efficiency in management than independent retailers can in the nature of the case usually display; advantages in operation, inherent in the chain store type of organization, have been a factor, but probably not the major one.*

Much of what has just been said applies also to the growth of *manufacturers' and mail order chains*. However, a few added comments are in order. The growth of manufacturers' chains is probably due primarily to the difficulty encountered by manufacturers in securing satisfactory retail distribution of their products in any other way. The growth of the independently owned chain, the keenness of competition between manufacturers and between retailers for the consumer's dollar, the widespread inertia and inefficiency of retailers and the diversified character of the average retailer's business all help to account for the tendency of manufacturers to establish their own outlets.

Such success as the mail order houses have had in their chain store experiment is undoubtedly explained in part by the peculiarly favorable circumstances under which each of these enterprises was launched. Each company already had an enormous mail order business, with its merchandising facilities and contacts already established. Each had its various warehouses from which it could economically distribute to its stores as well as to its mail order customers. Each had a commercial prestige and goodwill perhaps unrivalled in magnitude and depth by any other organization in this country.

Under What Circumstances Have Chains Been Most Successful? In the first place, chains have met with some success in practically all retail lines. Their greatest success has probably been achieved in groceries, drugs, cigars and tobacco, shoes, variety merchandise, and gasoline and oil. In each of these trade groups but one, the retailer serves primarily as a transfer agent. He has occasion to practice very little real salesmanship. The amount of skill and knowledge he must possess is on the whole slight, and he is rarely called upon to serve as consultant to the consumer. Merchandise is for the most part standardized, and quite typically packaged. It is seldom perishable. It is for the most part capable of being turned over rapidly if sensible buying and merchandising policies are pursued.

In the grocery trade, and in considerable measure in drugs, tobacco, and gasoline and oil, the number of retail units is large and their locations close together. Hence it is possible for chains to take over their own jobbing function and to reduce costs in its performance. In groceries, drugs and tobacco products many items can be produced on a relatively small scale. Margins between the manufacturer and jobber are frequently high, hence the opportunity and urge for control of production by the chains. The conspicuousness of chains in the shoe trade is probably due primarily to the desire of manufacturers to control their own outlets—the fulfillment of which is made possible by the character of the shoe trade structure. In most other lines in which the chain has appeared it has had either a moderate growth or has had questionable success in earning profits. In practically all of these lines one or more of the circumstances above enumerated have not been present. Turnover possibilities have been slight; a high degree of skill and resourcefulness has been necessary in the retail store; servicing has been required; products have been unstandardized or highly perishable; or retail units have been widely scattered and hence inaccessible for purposes of delivery or supervision.

The hardware trade is an excellent illustration of a class of retailing in which the chain store has not developed extensively, and to which it seems to be none too well adapted. It is probable that less than 10 per cent of the retail hardware business is chain controlled. There seem to be various reasons why this business does not present an attractive opportunity to the chain store. Hardware stores typically handle a long line of merchandise, numbering between 2,000 and 10,000 items, many of which inevitably turn slowly. Their stock is of a very heterogeneous character and probably is not capable of being moved rapidly. Standardization of stock and service over wide areas is difficult because of the necessity faced by each store of adapting its business to the locality it serves. Capital requirements are somewhat high, although this is by no means an insuperable obstacle to chain development. The personal service factor is extremely important, as many customers of hardware stores look to the proprietor for information and advice in buying. Servicing of the product is also sometimes necessary. In the handling of certain hardware lines skillful floor salesmanship or even outside selling is a prerequisite of success. The "cash-and-carry" principle is often not adapted to this type of outlet, and the stock usually carried is of such a character as to make supervision and control from a central headquarters very difficult. Stores are relatively few in number—about 40,000 in the country as a whole—and widely scattered. Hence wholesale distribution economies probably cannot be realized. All in all we do not seem to have a strong case for the chain. It does not necessarily follow, however, that chains will not become an important factor in this trade. It is reported that a chain of several hundred stores operating in a number of states out of Minneapolis is meeting with success and is giving hardware jobbers serving the northwest very keen competition. There are several hundred hardware chains in existence, but most of them are of very small size. It should be noted, however, that certain items customarily sold by hardware stores are being sold in large volume by variety and drug chains.

As far as *geographical location* is concerned the chain type of retail organization has of course developed on the largest scale in the states east of the Mississippi and north of the Ohio. At the present time a very rapid growth is being experienced in the Pacific Coast states. And such organizations as the J. C. Penney Company are demonstrating that chain stores can be profitably operated in the South and West. Accurate data on chain volume by states unfortunately are not available. The subject may be dismissed by pointing out that generally large cities are the most fertile field for chains, with areas in which towns of 5,000 or more population are in close proximity to one another ranking next. The inference should not be drawn that the comparatively unpromising trades and areas will be immune from the chain influence. They have in countless cases already felt the effect of the chain and will probably feel it more as expansion of volume in the more verdant pastures becomes increasingly difficult.

Opposition to Chains. What measures have been taken to combat chains, and how successful have such measures been? Independent retailers, wholesalers, and certain types of manufacturers are the three parties who have shown the gravest concern over the so-called chain store menace. Either individually or in cooperation with one another they have resorted to countless devices for the purpose of self-preservation. Much ingenuity, and incidentally considerable naiveté, has been displayed in building up a case against the chain. The following excerpt from an address delivered before the American Retailers Association is fairly typical of the defense mechanism that many independent retailers and wholesalers have set up:

Chain stores serve to weaken a town because they draw money out, whereas the independent retailer spends his profits at home. The chain manager fails to participate in local civic and charitable enterprises, while the independent dealer contributes to these projects and handles the town's credit business and is otherwise a part of its existence. With a clear understanding of the situation once in their minds, no business men or laborers or farmers should spend one penny in the chain stores of their towns. The few cents that they will save a year do not warrant their patronage. Wholesalers and manufacturers should help the independent combat the chain store menace, for they are only protecting themselves. Chambers of commerce should issue pamphlets arousing public sentiment against the chain stores.

The argument is so absurd and futile as to be pathetic. Chamber of commerce pamphlets will not destroy the chain store. The "patronize home industry" appeal is of course attractive to many, but it is not the foundation upon which the trade structure of this country has been erected.

One also hears that chains do not employ local help, that they pay low wages, pay lower taxes than local merchants, are of little value to local bankers, tend to make us a nation of clerks, "limit the opportunity of American manhood," and centralize the business of the country in few hands. Space does not permit dealing with each of these points separately. Suffice it to point out that if the consuming public felt strongly that chain stores had an anti-social effect, chains could not prosper. Let it also be noted that mass merchandising is in a sense merely an extension of mass production to a new field—and the tremendous growth of the latter in the past half century, pro-

duced on a large scale exactly the same conditions which the chain store merely extends.

But the defense against the chain has taken the form of something more tangible than bad reasoning and futile gnashing of teeth. Among typical defense measures are the following:

1. Efforts to legislate or tax the chain out of existence. Laws passed in Pennsylvania, North Carolina, South Carolina, Georgia, Indiana, and Kentucky are cases in point. Several of these laws have already been declared unconstitutional by the courts.
2. The formation of operative groups of retailers or jobbers or both, for the purpose of securing either the advantages of chains or comparable efficiency in management.
3. The merging of jobbing concerns (*i.e.*, McKesson, Robbins) to secure the advantages of large-scale operation.
4. The adoption by manufacturers or jobbers of plans designed, through training or otherwise, to enhance the efficiency of independent retailers.
5. The opening of their own retail outlets by manufacturers.
6. Heavy advertising by manufacturers (and in a few cases by wholesalers) to establish a brand preference too strong for chains to ignore or overcome.
7. The adoption by manufacturers of price or other sales policies which do not favor the chains.
8. Efforts on the part of wholesalers to bring pressure upon manufacturers and force them not to sell chains.
9. Organized efforts on the part of independent retailers, often supported by jobbers, to exploit the service appeal, and convince the consumer that the economy of the chain store is really a false economy.

It is impossible to say with what success all these measures will eventually meet. One is reasonably safe in expressing the opinion that in the long run it will do no good to legislate against the chain (except as such legislation may be necessary to curb unfair competition), to engage in boycotting those who do business with the chains, or to organize for the purpose of exploiting a selling appeal which does not have widespread popularity. Whether cooperation among retailers, wholesalers or manufacturers will solve the problem is difficult to say. Cooperative groups have in many instances been successful; in numerous others unsuccessful. In the last analysis cooperation does not give the same advantages as can be obtained by an organization bound together by authority. In volume advertising, direct selling and similar measures manufacturers undoubtedly have powerful tools with which to combat the strength of the chain when circumstances are favorable.

In the long run the only successful method of meeting chain store competition will be to fight fire with fire. Unless competing agencies can find a way of rendering comparable services at comparable prices they cannot survive. Chain store competition can be met only by matching the chain store in efficiency of operation, or by so organizing as to secure the advantages of mass merchandising which now accrue to the chain. The miserable showing that has often been made by established agencies in combating the chain is in considerable part due to an unwillingness to face this fact squarely. The whole matter is well summarized by the following quotation from an editorial in the *Retail Ledger*:

The merchant who finds his own methods less efficient than those of his competitor will do better to study his competitor with a view towards adopting such of his efficiencies as he can, than by berating that competitor as a menace to American business.

This same counsel applies to manufacturers and wholesalers as well as to retail merchants.

Effect of the Chain Store on Distribution. Speaking in general terms, the growth of the chain has undoubtedly brought about a more compact, more highly integrated and better organized system of distribution than formerly prevailed. Because of its peculiar characteristics it has greatly sharpened competition and has tremendously stimulated the application of intelligence and resourcefulness to the solution of distribution problems.

It has affected the *retailer* in various ways. In countless cases it has resulted in the elimination of the small independent dealer. It has compelled the great majority of independent retailers, who would survive, to study their problems and evolve more efficient methods. It has in considerable measure been responsible for the formation of cooperative associations and syndicates whose main purpose has been to strengthen the independent's position in buying and selling. It has in all probability brought about a concentration of the retail trade in the hands of a relatively small number of stores. Whether it has caused a reduction in the total number of retail units is not known, but it has unquestionably reduced the percentage of the total retail volume in the hands of small independent merchants.

The position of the *wholesaler* has also been weakened by the chain. In numerous instances, particularly in the grocery, dry goods, and drug trades, wholesalers have been forced to go out of business. In many other cases they are finding it very difficult to maintain volume. The chain has also compelled in a number of instances the abandonment of small-scale, narrow-gauge methods, and has forced wholesalers to consolidate either with one another or with retail units in order to secure the advantages of integration and mass operation. Not only have actual mergers been brought about, but a great many cooperative experiments have been and are still being tried. For the first time in their business history wholesalers have been compelled to recognize fully the importance of efficient retail outlets to themselves, and to take such measures as will tend to secure such outlets. Wholesalers have also found it desirable to cultivate more intimate working relationships with manufacturers and to try to persuade them to adopt policies which will give them complete protection. In all probability the adoption of private brands by wholesalers is attributable in part to retail competition as well as to the competition of manufacturers' brands.

Finally, what effect has the chain store had upon the *manufacturer*? It has of course in some instances weakened the market position of the manufacturer and threatened his domination of the consumer. This explains the somewhat radical prediction of some that manufacturers' advertised brands are doomed. For many manufacturers the chain has created the question of which of two horses to ride—and how. Frequently, of course, the problem is one of trying to ride two horses simultaneously. The tendency in certain lines, notably groceries and drugs, for chains to develop private brands obvi-

ously threatens the dominance of manufacturers' brands. The tendency towards control of manufacturing by chains, which is observable in some lines, also creates a problem for the manufacturer. In the drug field chains are doing some of their own manufacturing of such products as rubber goods, writing paper, food products, candy, ice cream, hospital supplies and toilet preparations. Grocery chains often operate their own bakeries, roast their own coffee and produce their own canned and bottled goods, and meats. The mail order chains are producing their own paint and selling it under their own labels, and by so doing are creating for paint manufacturers a real problem. Such a trend may well cause some disturbance in the minds of large-scale producers at least. Looking further, the growth of chains has in innumerable instances compelled manufacturers to take an active interest in the wholesaling and retailing of their own products, and occasionally to engage in their own retail distribution. It has in a few cases been responsible in part for the formation of mergers or cooperative organizations designed to permit direct marketing and more effective control of distribution. And finally it has in a large number of instances forced manufacturers to face squarely the blunt question as to whether to cooperate with the chains or fight them.

What Is the Probable Future of the Chain? Prediction in the chain store field seems to border upon folly, yet to everyone in business who is affected by the chain it is of practical importance. Yet I am inclined to hazard the following guesses:

1. In lines in which the chain is already well developed it will continue to increase its volume rapidly for some years to come. Added volume will come primarily from hitherto unexploited geographical areas, from the adding of new lines and through growth and shifting of population.

2. In lines in which the chain type has not yet assumed an important position it will also make progress, although through a different type of organization than that which has characterized such lines as groceries. I would not be surprised to see chain growth in these industries progress at a moderate rate for many years to come.

3. Control of manufacturing and of brands by chains will progress rapidly in certain lines where circumstances are favorable, but I do not share the view that manufacturers' advertised brands will disappear.

4. Distribution generally will become much more highly integrated than it has been, the tendency being to develop wholesale and manufacturing facilities to match retail outlets rather than to attempt the construction of retail facilities to dispose of the chance output of wholesale and manufacturing units.

5. With the passing of the old generation a new crop of merchants will gradually appear, better equipped with modern merchandising and management ideas and technique, and capable of meeting the competition of large organizations successfully. Whether these merchants will be content to operate single stores or will develop their own chain organizations remains to be seen.

6. Cooperation and organized effort will become much more important and prevalent among individual retailers than has been true in the past.

7. The distribution machinery in general will be geared for economical operation and the strategy of merchandising, the slogan of which is now

"high quality at a high price" will be supplanted by the strategy of "high quality at the lowest possible price."

8. A number of chain organizations will, within a decade or two, control a sales volume in excess of one billion dollars each.

9. Distribution through manufacturer-controlled retail outlets will become more prevalent, but will not develop in certain trades.

10. Manufacturers and chains will come to recognize common objectives and will cooperate in distribution rather than combat one another. This trend is already in evidence.

11. The independently owned retail store will not disappear but will in many instances be a vastly different enterprise from its present-day counterpart.

CHAPTER XI

EXPORT MANAGEMENT

By E. B. FILSINGER, *Foreign Sales and Merchandising Counselor*

This chapter is addressed not so much to the executive who is already experienced in export work as to one who is starting in the field. This explanation is necessary lest those who are thoroughly versed in export trade practice find it elementary. Although intended principally for beginners, it has been planned with an eye to the development of a business, which though at first small, may eventually assume large proportions.

Accordingly, even those who direct a business of large magnitude may find herein suggestions for procedure which may be of value. As a matter of fact, it may be stated unequivocally that the principles of conducting overseas trade are precisely the same whether the volume be small or large. This is something that is often overlooked.

When a large manufacturer enters a new market, he must go through the same motions as must the smaller man. He has to be equally careful about his *relative* expenditures. From the proportionate or relative standpoint, a smaller manufacturer of the right kind of goods that are saleable abroad can perhaps make a larger net profit than can the huge corporation. He can, in exactly the same fashion and at no greater *relative* cost than the large concern, build up a satisfactory volume of business.

Making Haste Slowly. Far too many firms suddenly decide that they wish export business. Through ignorance they expect instantaneous results. This is a serious mistake. If useless expenditure, errors of judgment and misdirected effort are to be avoided, it is essential in building export sales to "make haste slowly." The failure to understand this has not only often resulted in heavy losses, but has so discouraged beginners in foreign trade that they have permanently lost all interest in exporting.

The beginner should realize at the outset that many of the firms who are doing the largest and most profitable overseas business today, use the utmost caution and conservatism in the initial stages of export trading. They thereby avoid not only disappointment but costly mistakes and wasteful effort.

Organization of the Export Department. To build a successful export business it is not necessary for the beginner, whether large or small, to create a huge organization with a correspondingly large overhead. It is wise to feel one's way. Expansion can take place as developments justify. However, one principle must be followed regardless of the size of the concern. It is this: One individual must be placed definitely in charge of the export depart-

ment. He must be held responsible for results. Success cannot be expected if the responsibility is divided. Many failures in attempting to build overseas trade may be traced to the failure to recognize the importance of this principle. If the head of the concern, the domestic sales manager, the advertising manager, the production chief, and the credit man, all attempt to dabble in the many problems that arise in connection with export, failure is almost inevitable.

Assuming that the individual chosen to manage the export department is of the right caliber, he should be placed on a parity with the domestic sales manager. He should report preferably to the titled officer to whom the domestic sales manager is answerable. In certain forward-looking concerns the president is interesting himself in both domestic and export sales. When that is not possible, one of the other high officers should do so. In the case of a small firm, the head thereof should require the export manager to maintain continuous contact with him. This is recommended because if the chief executive takes no interest in the developments, it is likely that the export manager may make a mystery of what is transpiring. The result will be that overseas business will come to be looked upon as merely a necessary evil, and that the solution of the problems that arise will rest wholly with the export manager. In a properly conceived plan for expansion overseas, the export executive occupies a seat at the council table. He is called into consultation whenever there is a discussion of policies, no matter what their nature. This is logical for the reason that many products, with slight changes, may be adapted to foreign demand. It is to be assumed that the right type of export manager will keep himself continuously informed regarding changes in buying habits, styles, methods of distribution, and advertising. In matters of production, if the views of the export department are obtained at the outset, later costly changes in method and packaging may be obviated. The export and domestic sides of the business can and should dovetail. The wise executive will maintain peace in his business family by avoiding the cause of friction between these two important ends of the business. It is accordingly highly desirable that this principle be borne in mind from the start.

The Ideal Export Manager. It is assumed that in deciding to build an overseas market the intent is serious. Permanent overseas sales cannot be found if export is merely a process of dumping when business is poor at home. Nor would it be possible to obtain the services of the right sort of individual to head the foreign division if that were the policy. The right type of export executive must like his work. He must have sympathy with foreigners and be able to get their point of view. He must not be a "know-it-all." He will take the trouble to inform himself thoroughly about everything likely to affect sales in foreign countries. He will be the type of individual who, knowing that his own reputation is at stake, will not go off half cocked. He will have the courage of his convictions and be willing to stand up and oppose a policy which in the light of his investigations he knows to be erroneous. He must not be afraid of detail. Export knowledge is a mosaic of innumerable facts gathered over a long period of years, in many places, and in all sorts of ways. Very often the right individual can be found in the domestic organization. If this is impossible, he should be sought outside.

Nor should the fact that a man speaks one or more foreign languages be held to fit him to undertake the duties of an export manager. In the selection of a foreign sales manager the language qualification ranks rather low.

The Duties and Responsibilities of an Export Department. In the case of larger concerns, who are doing a successful export business, it is frequently the custom to centralize in the export department, functions other than selling. These include shipping, credits, collections, financial arrangements, advertising, etc. However, it is rarely practicable in the case of a firm that is just beginning an export business, to adopt this principle, nor is it necessary that it should be done. It is of course assumed that the export manager will thoroughly inform himself about every detail in connection with packing, shipping, handling of documents, obtaining credit information, etc. Orders should be given by the chief executive that the mechanical carrying out of these details be in the hands of the respective departments that deal with them in the domestic end of the business. Supervision and final responsibility for their carrying out must, however, rest with the export manager. When the business (after development) has assumed proportions justifying their concentration in the export department, it is advisable that this be done. It makes for undivided responsibility and for greater efficiency. When the carrying out of instructions is left to various departments the likelihood of error is much greater. As concerns the granting of credit, it is a moot question as to whether this is a proper responsibility for the export department. In certain large organizations the export credit man is answerable to the head of the foreign division. Necessarily the volume of business done must be a large one to justify a separate credit department. The limits of space make it impossible to deal here with the many details connected with shipping, credits, financing, collections, etc. However, at the end of the chapter will be found reference to a list of books and publications in which a great deal of information about these subjects may be obtained. It cannot be too strongly urged that there be no penny-wise and pound-foolish policy about supplying the export department with the necessary tools with which to work. An intelligent conservative expenditure in this direction will pay good dividends. Mistakes are costly and can easily be avoided.

Sources of Information. The beginner in export has today available a fund of information undreamed of ten years ago. The most important source is the Bureau of Foreign and Domestic Commerce at Washington, D. C. There is scarcely a commodity or manufactured article about which it cannot quickly supply the necessary data as to the prospects for its sales in foreign markets. For the convenience of the American businessman district offices are maintained throughout the United States. It is highly desirable therefore that the district manager be approached by the prospective exporter. If the requisite information is not on hand it can usually be obtained in Washington. If not available there, arrangements can be made to acquire it through the foreign representatives of the Bureau, *viz.*, commercial attachés and trade commissioners who are scattered throughout the world. By cooperation with these officers and with American consuls, the department is able, in a very short time, to supply data, not only in regard to the saleability of goods but likewise to make definite suggestions for possible representatives with

whom correspondence may be undertaken. It cannot be too strongly urged upon beginners to consult the representatives of the Bureau of Foreign and Domestic Commerce before circularizing foreign representatives of the bureau and American consuls generally. In all likelihood, the information required is already on hand in Washington, consequently, much time and considerable money may be saved by obtaining the facts there. Furthermore, should it be necessary to send a questionnaire to the field representatives, this should likewise be done in cooperation with the bureau chiefs. Most of the letters sent to field representatives of the bureau and to American consuls are wholly inadequate in that they do not give sufficient information upon which the United States government officials abroad can act intelligently. Attention should also be drawn to the innumerable pamphlets and publications issued by the Bureau. These likewise contain important facts which throw light on the sales problem of the prospective exporter.

But there are also other sources of information, not only in regard to markets, but as to the best export practice. In many cities there are *export managers clubs*. The individual placed in charge of the export department should immediately make application for membership therein. The leading body of this sort is the Export Managers Club, Inc., of New York City. This club has in its files a vast amount of information on many phases of exporting. Upon request it will be supplied. If the desired facts are not on hand, the service committee will circularize the members and obtain the required data. From the members of these organizations, in analogous, but not in competitive lines, may also be obtained data and the names of possible foreign representatives.

In almost any library may be found the proceedings of the National Foreign Trade Council. The conventions of this body have been held for the past sixteen years and the published reports, of the speeches made, contain a great deal of practical information. Other organizations that may be consulted are the Chamber of Commerce of the United States at Washington, the American Manufacturers' Export Association, New York, the National Association of Manufacturers, New York, etc. Besides these sources, may be mentioned the publications of the Overseas Trade Department of Great Britain and those of the Canadian government. Books, many of which have been recently published, relating to individual countries and which are likewise available in almost any library, also supply many side lights and suggest possibilities for the sale of manufactured products. In brief, with a little effort the beginner in export can quickly determine whether his product is saleable in foreign countries. However, it is self apparent that it devolves upon one individual to coordinate not only advance study but definite sales efforts, if success is to be achieved.

Proper Filing of Market Data. It will be found in practice, that once the study of foreign markets has commenced, a great deal of information will begin to pour in. Under ordinary circumstances this would be placed in the general correspondence file. Nothing could be more shortsighted. From the outset, all the information bearing on an individual country should be filed separately. This will make it possible to consult it frequently and freely.

Furthermore, as new facts become available they will take the place of obsolete information. In this fashion a country file will always be up to date. This method, simple as it is, will, over a term of years, result in the collection of an invaluable fund of information. Obviously, if placed in a general file, a huge waste of money and effort will result.

Departmental Organization of Foreign Division. The export department should be built to meet future needs. This can best be accomplished by territorial divisions. For a concern that has real possibilities in overseas markets, the need for experienced men to send out as travelers will soon become evident. By organization of the department in territorial divisions, the man destined, say, for Latin America, the Far East, or Europe, can be automatically trained. As the business in one or the other of these territories assumes sufficiently large propositions to justify the sending of a man, he will have become available. That is, if, in the meantime, he has been assigned by the export manager to familiarize himself thoroughly with the country to which he is going, with the correspondence from abroad and all details of the sales made in his division. As part of his duties, he not only oversees the filling of the orders, but attends to the correspondence with local representatives, and customers. He does the necessary follow-up work and writes to prospective customers. The training of the young men, who will eventually become travelers, is a highly important step in the development of any overseas business. By this method it will be possible not only to familiarize them with the intricacies of the business but likewise to make a study of their conduct, character, ability, etc.

Precautions Regarding Instructions. Another precaution that it is desirable to take, is the following: From the outset, special instructions from foreign customers, regarding labeling, packing, marking, declarations, shipping, etc., should be carefully filed. This information must be kept in such shape that in the absence of any particular individual there will be no lapse from instructions. Mistakes, because of failure to follow directions are costly and fines are often imposed. Another good precaution to take is to place, in the upper right-hand drawer of each clerk's desk, an instruction sheet relating not only to specific customers, but to every duty that he must perform. This should be kept up to date by periodical checking. Standardization of practice minimizes errors both of omission and commission.

Alternative Methods of Exporting. There is no cut and dried formula for developing an overseas business. Only in a few highly specialized lines can hard and fast rules be laid down. The beginner has various channels of distribution available to him. These, roughly speaking, are as follows:

- a. Export commission houses (New York, San Francisco, New Orleans).
- b. Foreign local representatives, *i.e.*, sales direct to importers or dealers.
- c. Foreign customer representatives or distributors (exclusive territorial rights).
- d. Direct by mail solicitation.
- e. Very large foreign buying organizations such as chains, and cooperatives.
- f. Traveling salesmen.
- g. Combination export managers (even if these are used, one individual in the firm should still be charged with responsibility for export sales).

In practice, these methods (with the possible exception of the traveling salesmen) may be utilized by a merchant or manufacturer regardless of the size of his business. Frequently, large houses have recourse to at least the first five. It has been found by experience that the best and most lasting results are usually obtained by having local representatives in the principal markets. The trend, generally, during the past five years has undoubtedly been in that direction. It makes for more intimate contact with the ultimate distributor and consumer. As to export houses, it is possible, indeed under certain conditions desirable, to utilize their facilities also. They are taken advantage of by many exporters under the following conditions:

- a. In certain markets (principally smaller ones) where they have no local representatives.
- b. For buyers in places difficult of access.
- c. In markets where the export houses sell to certain firms whom the American manufacturer does not wish to solicit direct.
- d. Where the export houses buy outright under their own brands, etc.

Sales made through these channels obviously do not conflict with established representation agreements. In cases where orders are received through export houses for shipment to territories where an American firm is represented, a commission is usually reserved for the local representative.

Market Research and Analysis. It is an amazing fact that many business houses seem perfectly willing to spend money in an experiment with foreign trade, who consider it a useless waste of time to make studies and analyses before going ahead. They demand plans, specifications, details from their architects or engineers, but not from their export managers. Far too many American firms are still willing to appropriate large sums for technical and scientific research, although unwilling to make similar appropriations for market or sales research. They do so to insure improved methods of operation, better quality, lower costs, etc. It is more important than ever that the principles of scientific market analysis and sales research be applied to overseas trade. Some of the sources available have been previously indicated. Many more are at the command of exporters. When it is remembered that there are over one hundred countries, the impossibility of listing the individual sources of information in this chapter will become apparent. Suffice it to say, the principles of market analysis in foreign countries can be applied with the same perfection as in the United States. In some cases naturally, it is not as easy to apply the yardsticks commonly employed in the domestic market, but nevertheless, they can often be used. The beginner in exporting owes it to himself to make market studies. He need not do it on a vast scale. However, he should certainly make a very careful analysis of his prospects in a few of the more promising markets, that is, where the early indications point to possibilities. Upon the outcome of these studies will depend his method of approach, viz., the choice of method for entering the market.

Trial or Test Campaigns. Once having satisfied himself that there is a good prospect for the sale of his product in one or a few countries, he should take the next step. It is at this stage that many of the disastrous mistakes

in exporting occur. The would-be exporter suddenly imbued with a desire to export is not satisfied to go slowly. He wishes to accomplish everything over night. This is very shortsighted. No matter how encouraging the prospects, he should proceed with caution. It is preferable that he try out his proposition in one or two countries. If at all possible, they should be neighboring ones. If the neighboring fields do not offer the best possibilities then he is justified in entering more distant ones. However, in principle, he should concentrate on one or two countries. This will enable him to thoroughly prove his proposition and make his mistakes on a small scale. By following this course he will be able to avoid needless errors, prove his plans, and acquire more speed in the third, fourth and fifth countries that he enters. The most successful and largest American firms, even in their domestic territories, rarely launch national campaigns. They use trial or test campaigns in restricted areas. This sound principle should invariably be applied by the beginner in foreign selling. By such a test he will be able to learn what changes in his product may be necessary: the people to whom he must advertise, the appeals which he must use, the expenditure that will be required, the best method of marketing, etc. Especially will he be able to inform himself regarding one of the most important factors in overseas selling, that is, his price policies. He will be able to determine whether or not his system of discounts is appropriate, whether to adopt a method of price fixing and price maintenance, how to avoid price cutting and if he is justified in advertising the retail price. Incidentally, he will likewise be able to give some thought to the method of setting quotas. This is an end which he will eventually wish to achieve. Every fact that his initial studies in one or two countries reveal, can be utilized to advantage in later campaigns.

The Export Sales Manual. One of the most important benefits of a trial or test campaign in one or two countries has yet to be mentioned. It is the acquisition of information on which to base a sales manual or instruction book. It is to be assumed that the enterprising beginner in export has already prepared for his domestic sales staff a sales manual which embodies the chief facts about his product. However, in practice it will be found that in foreign countries it will be necessary to amplify or change the manual to make it fit into local conditions. His initial efforts in his experimental fields will show him what is lacking and needs to be added. As a result, when he enters his third, fourth and succeeding territories, he will be in a position so to present his proposition that time can be saved. The export sales manual need not be an elaborate or fancy book. It should contain the indispensable information in regard to the product, suggestions for meeting objections, etc. Frequently and certainly, at the outset, while in the period of development, such sales manuals need be only mimeographed. After a year or two the final edition will be so well worked out that the foreign representative to whom it is sent will be able to offer the product as intelligently as though he had been trained in the home office.

Sales Budgets and Quotas. Obviously, it is impossible for the beginner to make sales budgets and to set quotas. However, it is amazing with what rapidity this can be done once a start in selling has been made. The beginner's goal should be to set up sales budgets and quotas as rapidly as possible.

It should be no more difficult for the smaller manufacturer to do this than for the large one, the principle involved being precisely the same. Quotas are based on towns, cities and customers; then there should be additional quotas for lines of goods or single items therein. The quota is a mark at which to shoot. After the first year or two it is possible to achieve a high percentage of efficiency in fixing quotas. Naturally, local representatives should be consulted when quotas are in process of being assigned. So, too, should the traveling salesman. The reasons why certain figures are set should be explained to the local representatives and their own comments taken into consideration. The periodical checking of accomplishments, preferably on a month to month basis, and an analysis of results obtained in relation to the facts in hand makes for constantly increasing efficiency. Eventually it will lead to a forecasting of sales, cash receipts, stock on hand, etc. It cannot too strongly be urged on the beginner in export that he attempt at the earliest possible moment, to introduce a system of sales budgeting and quotas.

Expense and Profit Budgets. Profits are the goal of every business. These are often achieved in two ways: (1) greater sales, (2) avoidance of waste and losses. At the outset, it is possible for the beginner to determine how much money he is willing to spend for the various details in his initial campaign, including salary of an export manager, and trials or tests. It cannot be too strongly urged that an account be kept of the expenses incurred in all sales efforts. They should not be on the basis of a department as a whole, but by countries and by individual items of expense. The reasons for this will become apparent after a little experience. A sharp eye must be kept on the benefits derived from the various expenditures. It is on the relative value of these expenditures that future plans depend. In far too many cases, manufacturers who do business, say in a dozen countries, are making a profit on 25 per cent of their business and dissipating it on 75 per cent thereof. It should be sought scientifically to determine what sort of sales effort yields the best results. It should also be the aim to decide which type of sales promotion work, missionary salesmen's efforts and so on pay the best dividends. By carefully watching the expenses from the beginning, thereby knowing the facts, the manufacturer can not only insure himself a larger net return but he can make his money go much farther. As fast as new territories are entered, simultaneously with sales budgets and quotas, should be set up expense and profit budgets. Expenses should be broken down item by item. If this system is followed the manufacturer can save himself many disagreeable surprises.

Sales of Branded Goods. The manufacturer who markets his product under a trade mark has a distinct advantage. A trade mark is sales insurance. Not infrequently, especially in the initial stages, the sales resistance to trade marked goods is considerable. Often it is greater than on unbranded ones. Notwithstanding this fact, some of the greatest successes achieved in export selling have been on branded articles. It may require greater effort to sell trade marked merchandise, but on the other hand, once the demand has been created, the manufacturer, not the importer, is in control of the situation. Identification of merchandise permits its advertising and special sales promotion work. Without identity such sales efforts would go for naught.

Accordingly, from the very outset the beginner should plan to extend sales assistance to the dealer. In marketing many products no cooperation can be expected from the dealer unless such assistance is given. Even though there may be an insistent demand from the foreign merchant for unbranded goods, the American exporter should insist upon introducing his own brand. Should the American capitulate to the foreigner he will learn to his regret but all too late, that he has enabled the latter to build up his own business and has laid himself open to the possibility of substitution. Branded goods once introduced and supported regularly with advertising likewise enable the manufacturer to insure himself larger profits as well as permanency of trade.

The Importance of Advertising. Naturally, certain products, notably in production and machinery lines, require little or no advertising to the consumer. However, in the case of consumer goods, the beginner will quickly learn that unless he supports the foreign dealer with advertising, his business may be of very restricted volume or completely unsuccessful. Fortunately, there is a large fund of concrete advertising information and experience available to the beginner. There are advertising agencies which specialize in export advertising. Usually they work through local advertising agencies in the various foreign countries. In addition, certain of the larger American advertising agencies have in recent years extended their activities abroad. They maintain local offices in important centers and their American offices are equipped not only to give the fullest information regarding media, rates, circulation, etc., but also to outline campaigns, suggest appeals and advise fully regarding every phase of a well rounded sales promotion campaign. Export advertising should be planned long ahead. Six to nine months is not too far in advance of a campaign. This permits the submission of the details to the foreign representative for his suggestions and criticisms. It is highly desirable that this plan be followed in order to secure the fullest cooperation. In principle, the American manufacturer should himself control the advertising. Only in rare instances has it proved wise to allow the foreign representative to prepare the advertisements and to place the campaign in the papers. Arrangements should be made to "play up" the advertising to the local merchants. Precisely the same principles covering the coordination of advertising, sales promotion and selling apply in overseas markets as at home. In planning the introduction of consumer goods, arrangements should be made at the outset to support selling efforts with appropriate publicity.

Protection of the Trade Mark. The beginner who sells his products under a trade mark should take immediate steps to protect his brand in the markets where he plans to do business. Through trade mark attorneys the brand should be properly registered. If this is not done, he may suddenly discover that some enterprising foreigner, viz., a trade-mark "pirate" has registered the brand in his own name, either for the purpose of obtaining a cash payment from the unwary American business man or to secure for himself the representation of the concern. There are innumerable instances of this kind on record. Not only have excellent American products been completely excluded from certain foreign countries but in many cases, American concerns, who failed to take the simple precaution of registration, have had to pay through the nose for their oversight.

While on the subject of trade marks, the advantage of an easily pronounced name should be pointed out. Even though a brand may be well known in the United States, if it is not pronounceable or unsuited for one reason or another in a foreign field, it may be advisable at the outset to adopt a new name and trade mark that is appropriate. This likewise may save money in the long run. On the subject of trade mark registrations, valuable suggestions and information may be obtained from the Bureau of Foreign and Domestic Commerce.

Use of Sales Promotion Material. It is a truism that sales promotion material, display signs, booklets, etc., can generally be used abroad as successfully and effectively as at home. Obviously they must be in the language of the country. Much money can be saved if a simple precaution is taken. Before making shipments of sales promotion material to foreign representatives, single pieces should be sent to them for their approval. This is advisable because the duty on printed matter is often very high. Not infrequently display material can be obtained more cheaply locally than if shipped from the United States; when the latter system is followed, not only freight but tariff must be taken into account. Booklets, catalogues, in fact every sort of printed matter in foreign languages, if translated in the United States, before being printed, should likewise be submitted to the foreign representative. This precaution will save embarrassment resulting from incorrect use of words or phrases. Since color and illustrations in certain foreign countries have a special significance (notably in China and in the Near and Far East) it is highly important before contracting for large expenditures to consult the foreign representative. In passing, the importance of correct translation generally must be emphasized. This applies to all correspondence, but especially to initial letters soliciting answers or relating to agency arrangements. Reliable representatives are often scared off by badly translated letters.

Special Development Fund for Export Trade. Once the beginner has satisfied himself that there is prospect for the sale of his merchandise abroad, he should definitely determine how much money he is willing to spend on the development of his market or markets. This applies even to the preliminary or experimental efforts. If the results are sufficiently encouraging, he should definitely set aside a certain fund for further expansion. His investigations may indicate that not only no profits, but even a loss, may result from his first or second year's work. In order that he may be constantly aware of what his work is costing, he should set up a special development fund. This may be broken down in various ways, including sampling, sales promotion material, advertising, and commissions. It should be further broken down by countries. In reality, it is an expense budget. As bills are received they can be charged against the appropriate items. By following this method the situation will not get out of hand and he will be able to exercise a more exact control. It is highly advisable to follow this method even though the expenditures are written off, that is, charged to profit and loss as fast as made. Inasmuch as foreign business frequently cannot be made immediately self supporting, many concerns establish a special development fund. They look upon it as an investment to insure future profits and amortize it over a period of

from five to ten years. The method that is followed depends entirely upon the attitude of the manufacturer. However, it cannot too strongly be insisted upon that the most careful record of expenditures be kept. If this is done, it will permit the spending of larger sums in the more promising fields and withdrawal from those markets where neither the immediate results nor future prospects seem to justify the investment.

The Development of Export Salesmen. The greatest successes in overseas selling have been achieved by those firms who send their own representatives to canvass foreign markets. The advantages of this method are so obvious that no discussion is necessary. Precisely the same principles apply in this regard as in the domestic field. To a greatly increased degree, it will be necessary for American manufacturers, particularly those who produce highly technical apparatus, to send abroad technicians who can act both as demonstrators and salesmen. They are in effect sales engineers. However, even in the case of ordinary merchandise, *viz.*, consumer goods, the presence of a salesman on the ground frequently means the difference between success and failure. One of the causes of greatest waste in overseas sales effort has been the sending of the wrong type of salesman. It is becoming increasingly evident to a number of American manufacturers that the best results can only be insured by sending into the field men not only carefully trained, and thoroughly familiar with the product they are selling, but whose reliability and sales ability has been proved by a course of training and observation for a period of from six months to several years. The beginner, as soon as he has convinced himself that he has encouraging prospects, should prepare for his future sales efforts by undertaking the training of his sales staff. There is no cut and dried formula for developing export salesmen. Sometimes the right individual is found in the domestic department. Occasionally he must be employed from the outside. Some may be partially trained—others fully trained. Young men may be taken from colleges or universities, especially those which give courses in business training. Even though the best methods of selection are followed some failures are bound to result. In principle, it should be sought to develop their initiative by assigning them to tasks of one kind or another in the export department. Occasionally it is found advisable to let them demonstrate their selling ability in the domestic field. They may also canvass export houses, wait on visiting merchants, etc. As to training in general, the same methods may be followed for export as in the home market. The most important consideration is that the prospective traveler familiarize himself thoroughly with every phase of the product. In this respect the export sales manual will be helpful. Obviously, if the salesman is eventually to be sent to a Latin American country, he should learn Spanish. He should likewise, by a course of reading, familiarize himself with the countries to which he is to be assigned. The greatest stress should be laid on developing his salesmanship qualities. No salesman should be sent abroad unless he knows his business thoroughly and possesses such qualities that the chief executive is willing to invite him to his club.

Information Given the Salesman. No matter how carefully the salesman has been trained, nor how competent he may be, before leaving for his territory, he should be supplied with the necessary information to make his

trip a success. Nothing should be left to chance. As far as possible the routine of equipping export salesmen should be standardized. This will greatly simplify the sending of salesmen later to other fields. Among the indispensable items are the following:

- a. Full details of the market analysis made at the outset. This to include data of every sort bearing on sales prospects, regardless of origin.
- b. Record of sales made from the beginning and divided by departments, lines of goods, and kinds.
- c. Record of purchases of individual customers, also from the beginning.
- d. Information regarding customers' methods of payment, comments of the credit department, and complaints.
- e. Complete lists of prospective customers, for investigation.
- f. Quota sheets by departments, lines, kinds, towns, and customers.
- g. Suggestions and hints for canvassing the territory, methods to be used and so on. Campaigns. Sales promotion material. Details regarding past and projected advertising.
- h. Copies of representation agreement.
- i. Copies of correspondence with other possible representatives.
- j. Itemized expense sheet showing expenditures by items up to date of departure.
- k. Budgets of expense by items.
- l. Sales manual or information book.

In a word, the salesman should not be expected to trust to his memory for any important detail. As an additional precaution, a questionnaire should be prepared covering those phases of the market or marketing methods about which the export manager is either uninformed or concerning which he wishes additional data. This will not only save the salesman's time, but will insure that no important item is overlooked.

Determining the Relative Importance of Quality, Style, and Price. The beginner should realize that in foreign markets, identically the same conditions prevail in the matter of quality and price as in the United States. There are lines of goods demanded in which price is an important factor. In others, style is dominant and in still others, quality and finish. The situation is analogous to that in the United States where there is both a price and quality demand. In the average American community there are some stores that sell only on the basis of quality, others in which the keynote is low price. In the great American department stores, goods may be sold on the upper floors on the basis of style and quality; in the basement departments, price is all important. The beginner should determine for himself at the outset into which category his lines fit. In reality there is nothing incompatible in trying to sell goods both on a quality and price basis. It is important, however, to determine where the most promising prospects and profits lie and to evaluate one's facilities for taking proper care thereof.

Developing Goods Special for Foreign Markets. In overseas merchandising elasticity of mind is a highly desirable quality. Occasionally no changes whatever are necessary other than perhaps in the matter of label and packing. On the other hand, experience may prove that it is desirable to make certain slight changes. Properly planned merchandise, saleable in foreign countries

may be produced under mass production methods and interfere in no way with the domestic output. Occasionally, changes required to insure saleability abroad may even benefit the product in the domestic market. It is for that reason that the export manager should participate in all conferences relating to policy. His suggestions frequently are of the greatest value.

Selling on Credit. One of the most important factors in the development of an overseas trade is the extension of adequate credit terms. The beginner should realize the day has passed when a letter of credit can be demanded with the expectation that it will be opened. A study of foreign conditions will quickly show why foreign merchants require credit. Here are some of the reasons: The length of time goods are in transit; in the customs house while being cleared; en route to the interior; the heavy cash outlays for duty and freight charges; the time that the foreign dealer must grant to his own clients—sometimes four to six months; and always the factor of the unexpected. It is no longer difficult to obtain reliable credit information regarding foreign buyers. Credit is being successfully extended by English, German, French, Italian, Spanish, and other exporters. The merchants of these countries freely grant sixty days to six months on open account, sometimes even longer. They have been doing so for hundreds of years. Following are only a few of the sources from which credit reports may be obtained:

1. Personal contact (salesmen or local representatives).
2. Other firms dealing with the customer (American and Foreign).
3. American and local banking institutions.
4. The Foreign Credit Interchange Bureau of the Nation Association of Credit Men.
5. American Mercantile Credit Agencies (Dun's and Bradstreet's).
6. Local credit agencies.
7. The Commercial Intelligence Division of the Bureau of Foreign and Domestic Commerce at Washington.
8. United States consuls.
9. United States commercial attachés and trade commissioners.
10. Miscellaneous sources.

With ordinary precautions it is possible to grant credit as safely in foreign countries as in the United States. The combined experience of a great many manufacturers engaged in overseas business indicates that the total loss is less than one-half of 1 per cent. In many cases it is nil. The beginner should realize that if he expects to build up an export trade he must grant reasonable credits and that he can do so with no greater risk than in the home market.

Organizing the Export Executive's Work. It may appear from the foregoing that the work of an export executive with so many details to look after becomes unwieldy. As a matter of fact, with proper organization, this is not so. The export executive can be supplied periodically, daily, weekly, or monthly, as the case may be, with comparative statistical records that enable him to see at a glance the trend or tendency of his business. Such reports should be as simple as possible. They should reveal weakness and strength. He is thus enabled to apply almost instantly, remedies that if applied later

may prove unavailing. Nor is it incompatible with his daily work to make his studies of future markets. Sales research must be extended over a considerable period. With the help of an intelligent secretary he can direct even the largest and most complicated export division. The beginner should never forget that it is best to make haste slowly.

Coordination of Export and Domestic Activities. It is highly important that from the outset the export department be considered an integral part of the business. It must not be accorded an inferior position. Innumerable successes achieved by leading American firms prove not only that by proper coordination it is possible to develop a satisfactory export trade, but that it can materially aid the domestic output. The advantage of an additional 10 to 20 per cent of business from overseas as it affects profit possibilities is so obvious that no comment is necessary. The all important thing is that there be a thoroughly sympathetic attitude towards the development of an export business, from the president to porter. The profit possibilities of a successful overseas demand are so large that no effort is too great to realize them.

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SECTION II

FINANCIAL MANAGEMENT

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CHAPTER I

THE FINANCIAL EXECUTIVE'S PART IN MANAGEMENT

By D. W. HARRIS, *Vice President and General Manager, Arkansas Natural Gas Corporation*

The development of business, bringing to life large combinations of capital with far-reaching activities, has brought heavy responsibilities to the shoulders of the financial executive. Earlier methods of business organization permitted lesser responsibilities and presented more simple problems. A concern which could operate with one or two bank accounts and whose requirements for credit were moderate, because of a narrow scope of operations, would often permit a morning jaunt on a country road for the fortunate executive of former days or send him daily to his seat in the grandstand, when the ball team returned for the home series. No such happy routine exists nowadays for the financial executive, who steals his golf on a holiday afternoon, or leaves a pew vacant on Sunday morning, while a martyred family awaits his return for a belated lunch. Credits, banking relations, long term financing, and budget revisions have taken their toll of his time.

Importance of Broad Viewpoint. One of the important problems resulting from the present-day organization of business arises from the creation of separate responsibilities for the various executives who are carrying on the management of the business. A concern whose activities embrace such a variety of operations as the production of crude oil, the refining of petroleum, the marketing of its products, the transportation and distribution to customers, and the manufacture of natural gasoline through absorption plants of necessity requires the supervision of many executives who possess expert qualifications in their particular lines of endeavor. The job of the financial executive demands that he fit in his viewpoints with the operating executive in each division of his organization, thus compelling him to view every problem presented, not only from the standpoint of his ability to finance the project, but also from the perspective of the operator, whose consideration is primarily that of facilitating more efficient operations and production. To analyze the increase or reduction in expense, to evaluate the probable increase in earnings and to weigh the operating advantages incident to the completion of the project against the cost of capital to finance it, the determination of his ability to provide such capital and the methods with which he will provide it are some of the problems of the financial executive. Increase in efficiency of operations must be encouraged, cash and credit

must be conserved, and his conclusion and concurrence must find the happy medium, which does not always exist, between the two viewpoints that focus on the proposal. To accede on the one hand, without proper regard for the factors which are his own particular problems, may bring embarrassment and failure; and to veto, on the other hand, without seeming to lend a willing hand and without the ability and endeavor to point out strong reasons, with logic, diplomacy, and tact, may destroy the spirit of cooperation desirable at all times, kill the initiative of the operator, still his ingenuity, and impair the possibility of efficient coordination of the numerous departments of the business.

It is apparent that in order to equip himself satisfactorily to cope with the demands which will constantly come to him from the operating heads, the financial man must have a fairly comprehensive understanding of operations requiring continuous inquiry on his part and a broad classification of information to be ready at his disposal, which is only possible from careful study and intimate acquaintance with the operating units of the property. Such acquaintance may be augmented by a friendly association and social contact with other executives wherever opportunity presents, with the incidental advantage of establishing at the same time the human relationship which tends greatly to promote a satisfactory meeting of minds in the conference room, when divergence of opinions on business matters arise.

Some Duties of the Financial Executive. It is obvious that the more simple of the financial executive's functions would consist of receiving and disbursing the company's funds, with the attendant details of recording all transactions, as well as accepting the responsibility for passing on credits extended in the course of current business, together with the collection of all accounts accruing to the company. All of these functions present their own peculiar problems, and the methods used in obtaining results are of more or less common practice, so that a discussion of these items of responsibility in this paper, in detail, is hardly necessary. Suffice it to say that the item of credits has a vital relation to the company's business and its own financial standing and for that reason should receive careful attention and supervision from the financial officer of the company.

The fundamental duty of a financial executive demands a constant realization of his responsibilities to the owners of the enterprise. A proper appreciation of this primary responsibility will insist that invested capital shall bring a fair return, that additional capital shall be provided for necessary expansions to produce the same result. In order successfully to administer these obligations, additional functions are created. A satisfactory credit position must be maintained for the company, a wide acquaintance must be established with banks, investment houses, and other financial agencies and a thorough understanding should be had of the various methods of financing, giving proper regard to the fact that temporary banking credit is available only for current transactions and that capital expenditures must ultimately be provided from more permanent issues of stocks or bonds. To the financial executive whose organization is receiving the benefits of customer or employee ownership there is added the duty of assisting in the promotion and furtherance of goodwill among the company's employees, customers and friends lead-

ing to the creation of an ever-increasing number of satisfied partners. This is accomplished through the distribution of understandable and reliable information together with the maintenance of a proper relationship with these people as security holders. In this case the financial executive is also responsible for the initiation and maintenance of proper security sales policies whether distribution is effected through employee campaigns, through full-time sales force carried by the company or through investment bankers.

Economic Conditions and Trends. A constant survey of economic conditions and trends should be maintained in an effort to anticipate periods of industrial or business depression so that capital may be provided for future contemplated expansions under advantageous conditions at reasonable rates. Fortunately there are a number of business services today which employ large staffs for assembling and digesting data from over the entire civilized world. This data is collated and boiled down to a few pages in order that the busy financial executive may have at hand concrete facts in his judgment of the present and future economic situation.

The Financial Statement. The financial statement is the basis for all credit negotiations. For this reason, the executive must scrutinize each important transaction, keeping in mind the probable effect it will have upon the financial statement. Capitalization and bonded debt must be maintained in proper proportion to fixed investment. Additions to plant and permanent investments should not be permitted unless the annual return will safely provide the fixed charges for interest and dividends on the new capital invested. A proper ratio of current assets to current liabilities should be maintained as an evidence of ample working capital and to safeguard against sudden and unexpected adverse fluctuations in the business. As a further safeguard against quick, unfavorable developments in the industry, ample bank lines should be available as a cash resource to meet such situations when urgent need arises. Inasmuch as banking credits are granted only where speedy liquidation is apparently possible, the quick asset position of the company is important as is also the ability to meet fixed charges of interest and dividends from current earnings. Banking credit cannot be commandeered at will. It results most readily from a satisfactory experience in previous transactions, which includes the maintenance of accounts profitable to the banker and record of prompt attention to maturing obligations, as well as being founded upon a periodic credit analysis made possible by the frank presentation of statements, which will permit a complete and thorough understanding of the company's operations, business and financial position. The financial executive is therefore interested and must insist that the accounting procedure of his company be administered in a manner which will enable him readily to present a statement of the business which his banker will understand and make it possible to answer satisfactorily and completely the questions which the banker will undoubtedly ask.

The Financial Executive and the Budget. Manifestly, few human minds could intelligently administer these responsibilities and properly exercise these functions in a large and complex business without depending to a considerable degree on the associates, who are in charge of the various units of the business. To supplement such a deficiency in human ability and to

provide the necessary procedure for information and contact the annual budget of operations in all its phases has come into being. This budget cannot be a mere catalogue of intended expenditures, but should include a careful analysis and estimate of all the elements in detail of the operating program for the year. It should be so designed that it will train all of the managers of the various activities of the business in forecasting future requirements of their respective units and supply a test of their judgment by a comparison of actual results with the predictions that have been made by them, appraising their ability to foresee the opportunities which exist in any situation and their capacity to realize their expectations. In its final form, when presented to the financial executive, the budget should represent the coordinated estimates of all the managers of the business, consolidated into a well-balanced outline of the future activities of the entire company. It should be built upon the basic fundamentals of volume and price and should provide for periodic revisions made necessary by variations in these two factors, which will, of necessity, occur in every industry.

In no business with which I am familiar, is this more necessary than in the case of a company engaged in the production, manufacture and marketing of crude oil and its products, an industry in which the fluctuations of price are both rapid and frequent and the volume of production is always uncertain. For example, you will recall the situation in the oil industry in 1921. During that year the price of crude oil in the Mid-Continent field declined from a peak of \$3.50 per barrel in the previous December, to \$1.00 per barrel in the following June. Again, in 1923 six major pools were discovered, producing in excess of 100,000 barrels per day in each pool. Not only did this sudden increase in volume of production depress the price of the commodity, but the increased drilling activities forced the oil companies who held acreage in the areas of discovery to develop such acreage during the period of declining prices and at a time when the supply of crude oil was greatly in excess of the demand. The financial executive for the oil company was therefore not only confronted with the problem of readjusting the financial situation of his company, because of the reduction in income, but was also compelled to supply additional financing for the development of the leases owned by his company in the areas of discovery.

No executive of any business is more intimately concerned with the budget, its preparation, the accuracy of its forecast and the restrictions of its appropriations, than the financial officer of the company. To him it is a blue print in dollars of the year's operation; it enables him to plan with foresight, with judgment and with accuracy, fortifying his own judgment with the combined judgments of his associates; it enables him to finance properly and economically; it enables him to project the financial statement of the company into the future and to visualize what the financial position of the company will be when the budgeted program is completed.

If the operating management imposes upon the financial executive the responsibility for providing capital needed in the business and passes judgment upon his ability to meet such demands as they arise, an obligation, in turn, rests upon the operating management to provide its financial officer with information, in detail, as to the extent of the capital requirements that will be

needed, at a time sufficiently in advance of its use to permit of the production of such capital in the manner most suitable to the items for which the additional capital is to be expended. Thus there is established a relationship between the operating and financial executives, leading to a concurrence of judgment in matters of importance to the company's welfare.

Conclusion. From this study of the financial executive's part in management and his relation to other executives, are we not to conclude that his part in management is an important one? However, the entire management should represent the combined judgment of all in charge, whatever the individual functions may be, a judgment to be attained only by the patient cooperation of everyone responsible for the destinies of the enterprise. Credit is sensitive, personal contacts are valuable, and unstinted cooperation carrying with it the combined advantages of each individual personality goes far in making the job easy for those who are called upon to do it. It is not the purpose of this discussion to emphasize the importance of the responsibilities which rest upon the financial executive without expressing an appreciation of his obligations to his associates. It is the aim, rather, to lay stress upon the factors with which the financial officer is compelled to deal and to solicit for all executives a better understanding of the interdependence between the different departments of the business.

Enjoying cordial relations with his associates, a strong credit position for his company, a complete and accurate budget, a list of friendly banks, and a ready market for his company's securities, our burdened financial executive may not be required to desert his church pew on Sunday morning, to the delight of his family and, of course, to his own supreme satisfaction.

ties realized more clearly that the investor is buying future earnings as well as safety for his principal. They realized the vast difference between the earning power of assets and liquidation value. As the result the financial investigation was supplemented by the industrial survey which determined the facts necessary to discover and evaluate the economic reason for existence of the business, presented a diagnosis of the financial, sales, and manufacturing management of the business, discovered potential earning powers and brought to light other facts bearing upon the probable future earning power of the business.

Such facts as those presented by the financial investigation and analysis and the industrial survey also became of increasing value to the officers of the company enabling them to better serve their stockholders through more effective administrative management.

While the investment bankers and those who serve them professionally were developing the financial investigation, the financial analysis and the industrial survey, the institutional bankers and credit men were developing a similar technique based on the analysis of financial statements by means of ratios.

The Ratio Method of Financial Analysis. Briefly the ratio method of analysis consists of setting up certain ratios between balance sheet items and between balance sheet and profit and loss statement items in such a way that the relation of one to the other is evident, that trends can be determined and comparison made with identical ratios existing in similar businesses. These are usually supplemented by operating percentages determined by dividing each item on the profit and loss statement by total net sales. This latter is very often popularly referred to as "the distribution of the sales dollar." The ratio of current assets to current liabilities, usually known as the liquidity or bankers ratio is an example of the first type, the ratio of sales to fixed assets or vitality of fixed assets ratio is an example of the second, and the percentage of sales expense to net sales is an example of the third variety.

This whole movement has been the result of the application of scientific management, which is management based upon the collection and analysis of facts, to financial management much as it had been previously applied to manufacturing management and to sales management. While there were certain leaders of the movement the results attained could not have been secured without the collective action of corporation officers, bankers, credit men, accountants, engineers and others who realized the need for more exact and comprehensive methods of financial management and administrative control.

The recognized pioneers in the field of analysis of financial statements by the ratio method are James H. Bliss whose work on the subject was published in 1923, and Alexander Wall, secretary-treasurer of the Robert Morris Associates, a national organization of bank credit executives.

The ratios used by Mr. Wall are clearly set forth in the book "Ratio Analysis of Financial Statements" from which the following discussion of the subject has been excerpted.¹ These ratios are as follows:

¹ Excerpted by permission of authors and publisher from the book by Alexander Wall and Raymond W. Dunine, Chaps. VII, VIII, and IX, Harper & Brothers, 1928.

1. Current ratio.
2. Worth to debt.
3. Worth to fixed assets.
4. Merchandise to receivables.
5. Sales to receivables.
6. Sales to merchandise.
7. Sales to fixed assets.
8. Sales to net worth.

Current Ratio. This ratio is secured by dividing the total of the current assets by the total of the current liabilities. The result indicates the dollars of current assets as offset for the dollars of current debt. The current assets will normally turn into cash or its equivalent in the near future, thereby putting the owner in possession of funds with which to pay debts. The current liabilities will mature in the near future, at which time the creditors will expect payment. From the liquidation of the current assets the current liabilities will be paid. The higher, therefore, the current ratio runs, the freer the current assets are from debt claim by creditors, and the more likely creditors are to receive prompt and complete payment upon demand.

The Robert Morris Associates have found that it is simpler to express ratios in terms of percentages rather than as proportions; for example, instead of speaking of the current ratio as "two to one," greater accuracy and simplicity can be attained by expressing it as 200 per cent.

In reading the current ratio, or any ratio, the analyst must remember that the ratio for any single statement is only a momentary pause in the movement for that company. The same identical current ratio figure for two separate companies may not represent the same credit condition at all. The value of the use of the current ratio lies in its record and direction of movement not in its one-time point of rest. The analyst must base his decisions not, therefore, on any one statement but on a study of the record of the company for at least three and if possible five years in order that the direction of the movement may be measured, as well as the single position.

The so-called "*acid test*" is often used to supplement the current ratio. It is computed by dividing the total of cash and trade receivables by the total current liabilities. To meet the test satisfactorily the total of cash and trade receivables must equal the total current debt. Cash is, of course, immediately available for use in debt reduction. Receivables are only one step removed from cash and are subject to bad-debt shrinkage only. Cash and receivables are, therefore, almost exactly opposite in character to debts which are maturing in the near future. The acid test is a drastic one. While it is not always easy to meet, it has the quality of conservatism. The analyst in applying this test must use discretion as in some lines the character of the industry may prevent the test from functioning fairly.

Another ratio often used as a corollary to the current ratio is that of *working capital to inventory*. This ratio determines the sufficiency of the current ratio. Working capital is the excess of current assets over current liabilities. Inventory consists of raw material, goods in process, and finished goods. The ratio of working capital to inventory measures the amount of working capital tied up in inventory. If a company has a 200 per cent current ratio,

but a large percentage tied up in inventory, this company, as a rule is speculating in merchandise. This, of course, does not apply to chain stores or others doing a cash business. Any ratio involving the inventory item needs careful examination. Inventory is the item most often used to window dress a statement. Subjecting it, therefore, to as many tests as possible may assist in uncovering window dressing operations.

In the past too much reliance has been placed on the current ratio as a test of financial soundness. It is undoubtedly an important strength measurement in that it establishes the relation between debts maturing in the near future and the assets from which these debts are to be paid. As soon as it had become generally known that analysts accepted a current ratio of two to one as a standard indication of a sound financial condition, companies through window dressing operations set out to show this proportion on their annual statements. It has been found, therefore, that other ratios are necessary to discover the true financial condition of a company, and, that the current ratio alone is not a sufficient test of financial soundness.

Worth to Debt. This ratio is derived by dividing the true net worth by the total debt, including both current and funded debt. The net worth of a company is the sum total of the capital stocks both common and preferred, surplus and undivided profits. In short, net worth represents the difference between real assets and the obligations. It is the economic capital provided by the owners.

The ratio of worth to debt expresses the proportion existing between the capital owned by a company and the capital loaned to it by creditors. When a company must use the capital of some one else at all times to support its volume of business, it has taken the first step toward the so-called "top-heavy" condition. When the relation between the net worth and debt is below what is normal in the industry, the company's condition may be criticized as top-heavy with debt. The ratio of worth to debt ought to be watched as closely as the current ratio. It is probably as important a ratio as the current ratio. The higher the ratio of worth to debt the easier the debt pressure and the further removed the company is from being top-heavy with debt.

Worth to Fixed Assets. The ratio which results from dividing the true net worth by the amount of fixed assets expresses the proportion between the owned capital and the money not currently invested. Any net worth may be reasonably accompanied by a certain investment in fixed assets, but when the net worth is too small in proportion to the amount invested in fixed assets, the company is "overinvested in plant." If the ratio is abnormally low for that type of industry, too much of the company's capital may be invested in a fixed form. The ratio measures the reasonableness of plant investments. To supplement the worth-to-fixed-assets ratio, the ratio of *net worth and funded debt to fixed assets* is sometimes used. The fixed assets are taken gross. The latter ratio is a test of plant expansion and indicates how much of the stockholders' and bondholders' money is left after supplying the fixed assets.

Merchandise to Receivables. To derive this ratio the inventory total is divided by the total of trade accounts and notes receivable. The resulting ratio expresses the relationship between inventory, a cost item, and receiva-

bles, a selling-price item, which together usually form the predominating factor in the total of current assets.

Either an upward or downward movement of the current ratio may be largely or even entirely due to some conversion or movement of the ratio between merchandise and receivables. The analyst should watch the variations in the ratio of merchandise to receivables in order to ascertain whether the change in the current ratio is basic, or merely due to a change in the form of asset.

The fluctuations of this ratio, then, in a measure check the fluctuations of the current ratio. This ratio can also be used to indicate the preponderance of either merchandise or receivables in the current assets which makes a considerable analytical difference in estimating probable losses or profits due to inventory fluctuations in different phases of the business cycle.

Sales to Receivables. To obtain this ratio the net annual sales are divided by the total of trade accounts and bills receivable. The resulting ratio expresses the relationship between the total annual business and the outstanding receivables which are the uncollected sales for the period.

Receivables are the credit extensions of a company. A company which sells on a cash basis has no receivables; its sales furnish immediately the funds with which debts may be paid. So long as the sediment of receivables is not greater than usual in an industry, any single company is but meeting trade conditions. When the ratio of sales to receivables falls below the usual, then the customers of that particular company are slower in making payments than is customary throughout the industry. This of course indicates that an added expense of financing is necessary, inasmuch as the company must have extra capital with which to carry the slow paying accounts.

The larger the sales are in comparison with the receivables the more nearly the subject has approached to a complete collection for the period and the greater the probable liquidity of the receivables. Conversely, the lower this ratio the greater the probability of the presence of poor collection methods and stale receivables. An unusually high relationship, however, is to be questioned and carefully investigated as it may indicate that the company has resorted to the expedient of selling or hypothecating its receivables to a finance company and has not reported the contingent liability. When both the ratio of sales to receivables and the ratio of merchandise to receivables are badly distorted compared with common or average industry proportions it is particularly important to make a careful check in order to detect possible hypothecation of receivables.

Sales to Merchandise. This ratio is derived by dividing the net annual sales by the total merchandise inventory. The resulting ratio expresses the proportion between sales and merchandise which, while not a definite physical turnover indicator, is a comparable measure of turnover from year to year. The ratio is useful in discovering excessive inventory and possible speculative tendencies of the management. In other words, this ratio is helpful in determining whether the management is accumulating inventory beyond its present needs with the hope of profiting by probable price rises.

Merchandising capacity can be measured, within reasonable bounds, by the sales developed per unit of inventory. The higher the relationship of

sales to inventory, the greater is this merchandising capacity and the more probable the freshness, salability, and liquidating value of that inventory.

Sales to Fixed Assets. To obtain this ratio the amount of the annual sales is divided by the amount of the fixed assets. The result indicates the sale productivity of fixed assets expressed by the relation of sales to the money invested in fabricating, trading, or non-liquid assets.

Every dollar that is invested in fixed assets can be justified only if that investment results in a sales volume that will be reasonably productive. Unless sales result the investment is unsound and illogical. Mere volume of production is not always an indication of managerial ability; if the unit of production falls per unit invested the increased volume has been achieved with increased inefficiency. The relation of sales to fixed assets is a measure of the production results of capital and of the economic soundness of such an investment.

When the net worth to fixed asset ratio is falling, accompanied by a decline in the ratio of sales to fixed assets, liquid capital is being transformed into fixed capital at a more rapid rate than new capital is being added to the net worth. This investment is, accordingly, relatively less productive. When such a condition is accompanied by a declining net worth to debt ratio, the "vicious circle" is complete even though both net worth and sales may be increasing.

Sales to Net Worth. This ratio is derived by dividing the net annual sales by the true net worth. The result reflects the sales activity of the invested capital. When this ratio is increasing at a rapid rate from year to year there is danger that the company is "overtrading" that is, attempting to finance a volume of business too great in comparison to its own capital. Any slowing-up of sales or collections might make emergency borrowing imperative. If the ratio of sales to net worth is much above a reasonable proportion, there is always this danger of overtrading. On the other hand, if this ratio is far below usual, the capital of the enterprise is stagnant. As the ratio falls, the business may gradually lose its market and end in extinction.

Supplementary Ratios. While Mr. Wall and Mr. Duning recommend the above seven ratios as important additional tests to the generally accepted current ratio, they also suggest the following ratios as useful at times to explain or further emphasize conclusions which have been reached:

1. Net profit to sales.
2. Net profit to net worth.
3. Cash and receivables to current debt.
4. Net worth and funded debt to fixed assets.
5. Funded debt to fixed assets.
6. Working capital to inventory.
7. Raw material and finished goods to goods in process.
8. Working capital to total assets.

The two ratios, *cash and receivables to current debt* and *working capital to inventory*, are explained in the preceding section on the current ratio, and the ratio of *net worth and funded debt to fixed assets* in the section on the *net worth to fixed assets* ratio.

The ratio of *net profits to sales* is useful as a test of the profitable operation of a business. It naturally varies from industry to industry, dependent upon the usual turnover of receivables, merchandise, and net worth. This ratio varies, naturally, too, with the swings of the business cycle.

The ratio of *net profit to net worth* is a measure of the return upon the capital invested in the business by the stockholders. Mr. Wall and Mr. Duning would define net profits as the amount of profits which remain in the business after dividends, taxes and depreciation have been deducted.

The ratio of *funded debt to fixed assets* can be used as a supplementary test to the fixed asset ratios. As a measure of the extent to which the fixed assets are mortgaged this ratio determines the future possible borrowing power through mortgage bonds. In case of a low current ratio, the ratio of funded debt to fixed assets is useful in determining the probable extent to which fixed assets might be used for possible future borrowing through mortgage bonds.

The ratio of *raw material and finished goods to goods in process* applies only to a manufacturing concern. Raw material and finished goods are salable; in case of the liquidation of a company, goods in process must either be junked or additional expense must be incurred to put these goods into a finished state. This ratio, therefore, relates to the question of balanced inventory, and is of only secondary importance.

The ratio of *working capital to total assets* measures the liquidity of the working capital, and indicates how much of the total assets are free for the current operations of the business.

Bases for Ratio Analysis. No set figure can be given as the universal proper proportion for any of the ratios which have been enumerated. The usual or expected proportion varies from industry to industry. Processes by which the customary proportion for an industry may be discovered are discussed in detail in Chapter XI, Bases for Ratio Analysis.¹

Index of Credit Strength. The eight practical ratios recommended by these authors, as previously discussed, are not all of equal importance. To arrive at a real index of credit strength they must be weighted according to their relative importance in forming a credit opinion of any one company. A method of arriving at an index of credit strength with suggested weightings for seven of these ratios is to be found in Chapter X, under the title of Indexing Credit Strength.² The merchandise to receivables ratio is not used in the index because it changes, as a measure of underlying strength, at different times in the business cycle.

Importance of Analysis of Working Capital. It might be well also to draw attention to the fact that in a test analysis of unsuccessful industrial companies including a group of statements for twenty-nine enterprises representing seventeen different kinds of industry, the Bureau of Business Research of the University of Illinois³ found that approaching financial difficulties are

¹ *Ibid.*, pp. 166-179.

² *Ibid.*, pp. 152-165.

³ See University of Illinois *Bulletin* 31, "A Test Analysis of Unsuccessful Industrial Companies," July, 1930.

clearly indicated by the working capital position of an enterprise. The ratio of working capital to total assets, as indicated by this study, is perhaps even more useful for analyzing the soundness of an enterprise than the current ratio. According to this study, the analysis of working capital must be considered at least equally as important as the current ratio in an analysis of the current position.

Conclusion. While the technique of preparing a financial analysis from adequate financial statements is comparatively simple, once standard ratios and operating percentages have been determined upon, a considerable knowledge of accounting is necessary to avoid mistakes in entering the figures against the ratios and misinterpretations in drawing conclusions. Furthermore a complete financial analysis requires considerable knowledge of business and of the particular business in question.

The financial analysis should always be the first step in preparing the industrial survey which should then discuss such matters as the history and organization of the company, its products, competitors, market, sales methods, manufacturing methods and the like, all of which presuppose wide experience in finance, sales and manufacture as well as business judgment. The general method presupposes this knowledge and an analytical mind capable of securing and presenting the essential facts in logical order. The facts will differ in each case so that the ability to weigh evidence and draw correct conclusions is necessary.

FINANCIAL BUDGETING TECHNIQUE

BY CHESTER E. WEGER, *Manager, Budget Department, Henry L. Doherty & Company*

This discussion is to be confined, as far as may be practical, to a discussion of only one aspect of budgeting, namely, financial budgeting technique, using the methods and procedure of the Doherty organization as the specific examples.

Each of the individual operating companies under Doherty supervision, and there are more than a hundred of them, has its own management and operating personnel and each one functions as an independent unit in its own locality. All construction work is carried on under the responsibility of the local management and all bills are paid locally. In New York there is the central office where the executive staff is located. This means that there is in New York a central treasury in charge of the chief financial officer of the organization whose duty it is to pass upon the financial policies handed up to him by the local companies for his concurrence and to recommend the major financial policies for the organization and supervise the carrying out of those policies which are adopted.

To further clarify our minds as to the budget relationship between the New York office and the local properties, let me quote from an executive communication to all local property managers:

It is understood that the central office executive committee deals with every problem involving the expenditure of cash, strictly as a budget problem and views it with reference to its effect on the whole situation. The full

responsibility rests with every company manager and he must have such knowledge of his own budget situation as will enable him to control the individual factors affecting his budget so that the overall conditions agreed upon will at all times be carried out.

The wisest preparation of budgets is understood to be a first and fundamental duty and the carrying out of a budget already agreed upon is the first and primary test of the efficiency of the manager of every property.

This quotation fairly well defines the responsibility of the local managers to the executive committee in New York.

These New York executives are on the other hand responsible to many thousands of security holders for the safety of the principal which they have invested and also for the income on that principal to which the investor may be fairly entitled.

It is really impossible to consider financial budgeting as a topic by itself, apart from construction or operating budgets. Generally speaking, the opportunity for financing is founded upon considerations of capital investments and net earnings from such investments. By the very nature of this fact, the chief financial officer cannot alone be made responsible for the finances of the company, because capital invested and the earnings therefrom largely predetermine the opportunities for financing.

What Constitutes a Financial Budget? Financial budgeting in its broadest sense is particularly a management consideration. The treasurer's efforts alone can influence only certain items in the financial budget, so that the amount of the company's resources which he can turn into cash is circumscribed by external limitations of credit which are imposed by considerations of earning power and investment. In view of what has just been said, it seems clear that in considering the technique of financial budgeting, we ought not to overlook the important bearing which both the plant and investment budget and the earnings budget have on the financial budget.

In the Doherty organization, the financial budget is based upon estimated changes in the balance sheet. All of the various operations which enter into the business of any company requiring cash or its equivalent are thus covered by the financial budget. The projected changes in the balance sheet accounts expressed as additions to cash or deductions from cash comprise the financial budget. We commonly refer to this budget as the cash budget or more exactly as the consolidated budget, because it reflects all the activities of the business combined or consolidated into one estimate.

Admittedly this form of cash budget is not so simple as the more familiar form of cash budget which deals strictly with cash receipts and cash disbursements. It would be impractical for the New York office to attempt to keep informed about one hundred different local situations if their respective financial budgets were compiled in terms of expected cash receipts and cash disbursements. To be sure, such cash budgets can be made to reflect very accurately the cash production or cash requirement of a company and such statements do have a useful function in the treasurer's daily check on the cash till. But those who look after the finances of the company are interested in more than this. What information does cash receipts and disbursements afford the local management or the New York executives about business results or the effect of business policies? Collections from customers this

month bear no tangible relation to this month's reported net earnings. Cash disbursed for operating accounts bears no relation to the month's reported operating expenses. Similarly hardly an item on the conventional receipts and disbursements statement is of any value in the determination of significant business facts. From day to day, receipts and disbursements statements can be used to provide the treasurer with daily information about the state of the cash balance, but the individual in charge of the finances of the company will need to review the past and plan for the future, using balance sheets and earnings statements as a basis for his conclusions.

A Banker's Confidence in the Financial Budget. It has come to be recognized that through the financial budget we have a means of approach to the banker which is calculated to increase the confidence which he may have in management. Confidence is the basis of most credit arrangements so that if the budget system operates in such fashion as will permit one easily to interpret the estimated future results in terms which the bankers can understand, the budget system will undoubtedly have a favorable influence on banking relationships. When one reveals to the banker future plans, and takes him with complete frankness into one's confidence, there is bound to spring up a mutual understanding and respect which is certain to be of assistance. The balance sheet method of budgeting has outstanding advantages in this connection.

At any rate, balance sheets and finances are so intimately connected that our subject today instead of being financial budgeting technique might equally well be called balance sheet budgeting technique. It certainly seems to me that if it is proper to consider past results from the standpoint of earnings statements and balance sheets, it is of equal importance that we look into the future with the same kind of consideration.

Very early in the budget history of the Doherty organization, we adopted the balance sheet method of budgeting. Perhaps this method was forced upon us as being the only method which effectively made each elusive dollar, that passed through the cash box, tell from whence it came and why; also whither it was bound and when. It is surprising the number of places to which the dollars disappear in the average business and a goodly portion of business failures are directly traceable to a lack of appreciation of the host of semi-unproductive uses for capital that were overlooked when the financial budget was first compiled. Advance payments for insurance, stationery, etc., advance payments on equipment or stores purchases, special cash deposits, estimates exceeded on expenditures for additions and improvements to plant account, increased inventories over the estimate, failures to allow sufficient lag for collection of customers' accounts, the extension of longer credit terms to customers than allowed for in the original budget—these are only a few of the ways in which dollars may be unexpectedly hidden away, and their cumulative loss to the cash till usually causes no little concern, and often, financial embarrassment.

The balance sheet method of budgeting assures that consideration will be given to all such items as mentioned, to the end that the financial budget will be a more comprehensive statement of the expected future cash conditions of the company.

Let me explain by means of charts more precisely how the balance sheet budget is arranged. Figure 1 for example, shows at the top a summarized statement of the estimated earnings which, of course, is supported in much

FIG. 1.—EARNINGS BUDGET

	Advance estimate, calendar year	Actual previous year
Gross revenue.....	230,000	200,000
Operating expenses.....	172,000	150,000
Net earnings.	58,000	50,000
Interest expense.....	8,000	6,000
Net profits to dividends.	50,000	44,000

FINANCIAL BUDGET

	Advance estimate, calendar year A	Balance beginning of year B
Net profits to dividends.....	50,000	147,000
Dividends.....	<i>20,000</i>	
Replacement reserve.....	8,000	8,000
Prepaid expenses.....	<i>1,000</i>	<i>5,000</i>
Interest accrued.....	3,000	4,000
Taxes accrued.....	2,000	7,000
Capital securities.....		350,000
Expenditures for plant and investment	<i>25,000</i>	<i>400,000</i>
Credits to plant and investment.....	13,000	
Stores and supplies.....	<i>10,000</i>	<i>50,000</i>
Customers' accounts received.....	<i>15,000</i>	<i>100,000</i>
Bank loans.....	<i>5,000</i>	25,000
Accounts payable.....	<i>5,000</i>	35,000
Cash.....	<i>11,000</i>	21,000

NOTE.—In Figs. 1 and 2 "red" figures mentioned in the text are shown in italics.

detail in accordance with the full classification of operating and expense accounts. This statement begins with gross revenue and concludes with the item of net profits applicable to dividends. It should be noted here that

the item of operating expenses includes many items which are not current cash transactions. For example, the expenses include the monthly accrual charges for replacement and, also, monthly charges for taxes, neither of which represent cash dispersed in any particular month. Since these items of expense are book accruals, some adjustment will necessarily follow later to bring the cash picture into line. The item of interest expense, likewise, is a book accrual without reference to the payment date.

The lower section of Fig. 1 shows in column A the budgeted changes in the balance sheet accounts. This is the cash estimate or consolidated budget previously referred to. Additions to cash representing credits to these accounts are shown as black figures, while deductions from cash representing debits to these accounts are shown in red figures. If the estimated debits to an account exceed the credits then the net change shown on the budget will appear as a red figure. The algebraic sum of the changes in all other balance sheet accounts when expressed in terms of their effect on cash, gives the change in the cash account itself.

Concerning the \$8,000 addition to cash estimated for replacement reserve, it may be well to observe that this amount is a net figure between a \$21,000 accrual which is an assumed concurrent charge to operating expenses and a \$13,000 debit which is written out of plant and investment and offset on the line credits to plant and investment. Likewise the item of \$3,000 for interest accrued represents the difference between the \$8,000 of interest expense charges and \$11,000 estimated cash payment for interest during the year.

In column B are shown the probable balances in all the balance sheet accounts at the beginning of the estimated period. This is for convenience and assists materially in understanding the significance of the budgeted figure. Credit balances are shown as black figures while debit balances are shown as red figures. This color scheme makes it possible to add algebraically the advance estimate to the balance at the beginning of the period and conclude at a glance what the balance in the account is estimated to be at the end of the budget period twelve months hence. For example, stores and supplies will increase from \$50,000 to \$60,000 at the end of the budget period while bank loans are being reduced \$5,000 which will make their total only \$20,000. Cash on hand at the beginning of the period is shown as \$21,000 and it is estimated that this amount will be reduced by \$11,000 so that only \$10,000 will be in the bank at the end of the ensuing twelve months.

Method of Handling Construction Program. The construction budget as submitted by the operating companies for concurrence includes only those construction expenditures that are considered necessary or unavoidable to the satisfactory operation of the local company. All that class of construction items which might be called urgent or desirable is submitted in requisition form and totaled for financial estimate purposes but not included in the authorized budget. This procedure has been found to permit more time and attention to be given to the engineering and economic phases of a large and important portion of the construction program. This method of handling the construction program is of importance from the standpoint of the financial budget. This is true for the reason that it permits the major portion of the construction program to be authorized from time to time throughout the

year after there has been an opportunity to give full consideration to keeping the new investment at the lowest point consistent with satisfactory operating conditions with a maximum earnings return. Thus there is a tendency to keep the return on all newly invested capital at the highest level which should result in constantly improving the company's earning power and its credit standing. Also this procedure reduces the amount of outstanding commitments for construction and thus might conceivably avoid the necessity of withdrawing authorizations for construction in order to conserve cash lost through an unexpected decline in estimated earnings. The financial man soon finds a very decided reluctance for cutting operating expenses in a period of depression to offset a serious loss in revenue. Conservation of cash in such cases may be brought about through a contraction of the construction program. It is much safer and less costly and also less disastrous to morale to defer authorization on new construction work than it is to withdraw an authorization previously granted and on which some expenditure may already have been made. Another advantage of the minimum construction budget is that it permits an intelligent selective process to be used on the urgent and desirable class of construction expenditure, making it possible to pick out those items which promise the best earnings return. This, again, has the tendency to increase the earnings on the invested capital, which above all, the financial man is interested to have accomplished.

The submission of the budget by the local operating companies is scheduled early in the month of December. The budgets are reviewed thoroughly by the New York executive staff and are recommended to the New York executive committee for their concurrence. If the budget receives the favorable consideration of the executive committee, it is adopted as final and used for comparison purposes throughout the following year.

With the adoption of the final budget the first step of budget procedure is completed. The second step, but not least important, is to follow up carefully the progress of actual results in relation to the accepted budget. In our organization the financial comparisons are submitted by the local properties once a month. A comparison is made for the one month just passed and also for the period to date, the period to date comparison being simply an accumulation of all the monthly comparisons. The actual figures are obtained by the simple subtraction of the latest balance sheet from the last previous one. The comparison statements are made in the accounting department.

Figure 2 shows the general form of the financial budget comparison for the period to date. The actual results are shown in column C with the original estimate for the same period in column B. The differences between the actual and estimate appear in column D. The items listed are exactly the same as those shown for the financial budget in Fig. 1. Here again use is made of black and red figures in the difference columns to denote increases and decreases to cash over the original estimate. Many people have little sympathy for the use of this color scheme in showing additions of cash and deductions from cash. However, it has distinct advantages, the first being that red figures assist in picking out at a glance the items which need attention and the second is that the number of columns required is very materially reduced.

The third logical step in financial budget procedure is the revising of estimates. Figure 2 shows that the comparison for the period to date carries with it also the revised estimate for the remainder of the period. The estimates are ordinarily revised once each month at the time the comparisons are prepared. However, provision is made for submitting supplemental advices at any time if important fundamental changes in the outlook warrant their special consideration.

FIG. 2.—FINANCIAL BUDGET COMPARISON AND REVISED ESTIMATE FOR REMAINDER OF PERIOD

Balance, end of month A	Item	Period to date			Remainder of period		
		Original estimate B	Actual C	Difference D	Anticipated difference E	Original estimate F	Revised estimate G
178,000	Net profits.....	35,000	36,000	1,000	7,000	15,000	8,000
	Dividends.....	<i>5,000</i>	<i>5,000</i>	0	0	<i>15,000</i>	<i>15,000</i>
9,000	Replacement reserve	<i>2,000</i>	1,000	3,000	<i>3,000</i>	10,000	7,000
<i>6,000</i>	Prepaid expenses.....	<i>2,000</i>	<i>1,000</i>	1,000	1,000	1,000	2,000
0	Interest accrued.....	<i>4,000</i>	<i>4,000</i>	0	1,000	1,000	2,000
5,000	Taxes accrued.....	<i>3,000</i>	<i>2,000</i>	1,000	1,000	5,000	6,000
350,000	Capital securities.....						
401,000	Expend. for plant and investment.....	<i>5,000</i>	1,000	4,000	<i>6,000</i>	<i>20,000</i>	<i>26,000</i>
	Credits to plant and investment.....	3,000	.....	3,000	3,000	10,000	13,000
72,000	Stores and supplies....	<i>20,000</i>	<i>22,000</i>	<i>2,000</i>	4,000	10,000	14,000
115,000	Customers' accounts receivable.....	<i>20,000</i>	<i>15,000</i>	5,000	1,000	5,000	6,000
35,000	Bank loans.....	10,000	10,000	0	0	<i>15,000</i>	<i>15,000</i>
41,000	Accounts payable.....	8,000	6,000	2,000	1,000	<i>13,000</i>	<i>14,000</i>
24,000	Cash.....	<i>5,000</i>	3,000	8,000	<i>6,000</i>	<i>6,000</i>	<i>12,000</i>

NOTE.—"Red" figures are shown in italics.

The original estimate stands unchanged and the revision is accomplished by adding anticipated differences from the estimate. Thus column G is the sum of columns E and F. This method of preparing revised estimates is used because of the great saving of time which results in handling difference figures only on items that need to be revised rather than total estimate figures for all items in the budget. It would be quite a task to prepare a completely new estimate for the remainder of the period and it is much less work to handle differences from the estimate on the lesser number of items which require revision.

When the monthly budget comparisons with revisions for the remainder of the period are received in New York, they come to the attention of the budget department. Here the statements are carefully analyzed, compared

with the advices previously submitted and all important new factors reviewed in the light of the explanations which have been presented. A condensed summary is then prepared for the information of the treasurer, setting forth the important new factors which have come about to change the budgeted situation in any respect since the last advice, transmitting to the treasurer the explanations as supplied by the company on important differences and giving that officer the effect of the new factors on the New York cash account.

The New York budget department summarizes all the advices which have been received from the local companies every fifteen days and otherwise revises and brings up to date the budget for the New York office. In transferring funds to and from the central treasury in New York and the local properties, the budget comparison and revised estimate is used as the basis for determining when funds are to be available and the amount to be transferred.

PRICE FLUCTUATIONS IN RELATION TO BUDGETING

By J. B. DEACON, *Hoffman Beverage Company; formerly Member Board of Directors, Tidewater Oil Company*

Profit is the objective of business enterprise. The price margin between commodities or services bought and those sold determines the margin of profit. Hence price fluctuations are of vital concern to management. That management which is well equipped accurately to forecast price fluctuations of the commodities it buys and sells, and to act appropriately with reference thereto, is well fortified against losses and failure.

The growth in size and complexity of business enterprises necessitates systematic planning and control. Systems of financial and operating control of industrial establishments increasingly involve budgetary measures. Among those who deal with budgets it is axiomatic that the success of a budget system depends upon the ease with which forecasts may be revised to reflect changes in policies, programs, performance and prices. Price fluctuations are probably among the most frequent causes of budget revisions.

Probably an oil company's viewpoint of this matter is a good one to examine for the reason that price changes are frequent and often extreme in the petroleum industry. Furthermore, in this industry raw material costs, relative to labor and other costs, are exceedingly high. From this it follows that ability to gauge price trends is a part of the essence of sound management. No matter how competent the management of an oil company may be in other respects, if there be lack of ability to maintain an inventory position nicely adjusted to price trends, financial disaster will result.

The following charts confirm the assertion that price fluctuations in the petroleum industry are frequent and wide.

Figure 1 shows the trend of crude oil prices (posted quotations at well) for representative grades for the period January, 1925, to February, 1929.

Figure 2 shows the trend of gasoline tank wagon prices for the principal marketing centers of the Northeastern states for the same period.

Figure 3 shows the price trend of refined products in New York Harbor, also for the same period.

The price variation of crude and products generally reflected in the following three charts is emphasized in Table 1 (page 352), which shows (a) the number of price changes from 1925 to 1929, (b) the price range, and (c) per cent variation between low and high prices.

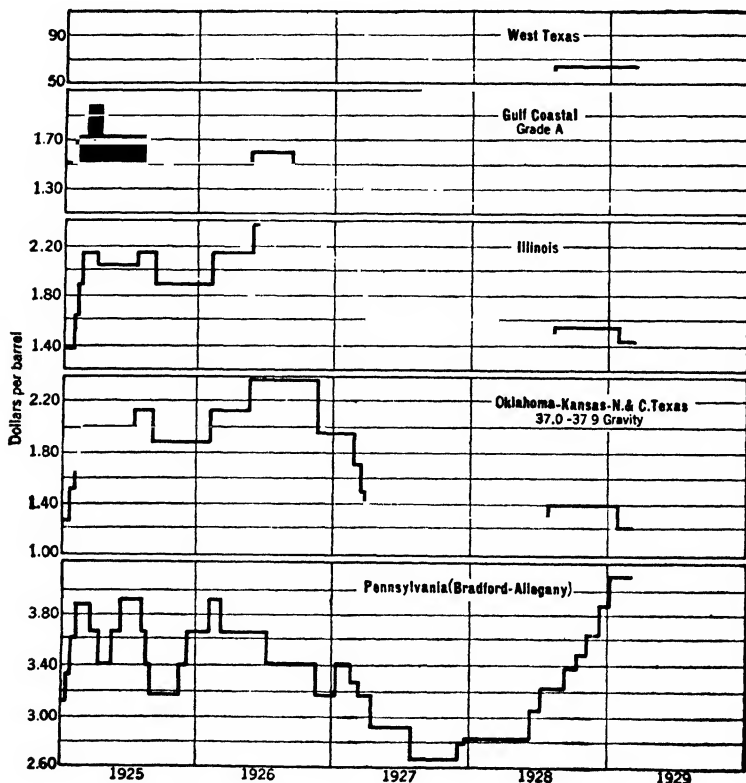


FIG. 1.—Trend of crude oil prices—posted price at well.

Figure 4 compares price movements in the petroleum industry with those in certain other representative industries, and with the general commodity price level. The chart is based on figures compiled by the U. S. Bureau of Labor Statistics, representing wholesale commodity prices. For the period covered by chart (January, 1925, to February, 1929) the following spread occurred between the low and high index numbers.

	Low	High	Spread
All commodities.....	93.7	104.8	11.1
Lumber.....	87.8	106.7	18.9
Bituminous coal.....	91.4	116.8	25.4
Iron and steel.....	93.5	107.3	13.8
Petroleum products.....	65.6	106.6	41.0

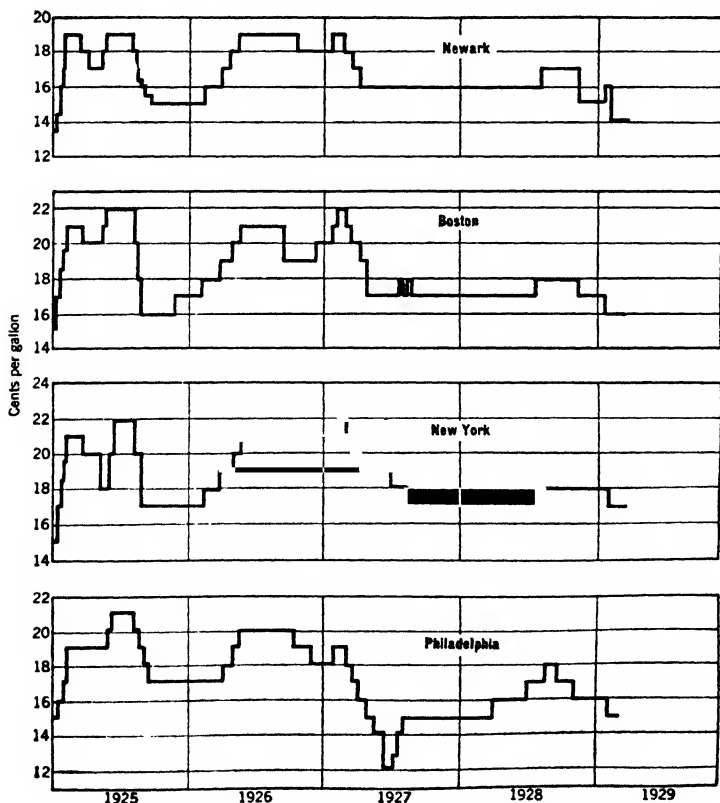


FIG. 2.—Trend of tank wagon prices—gasoline.

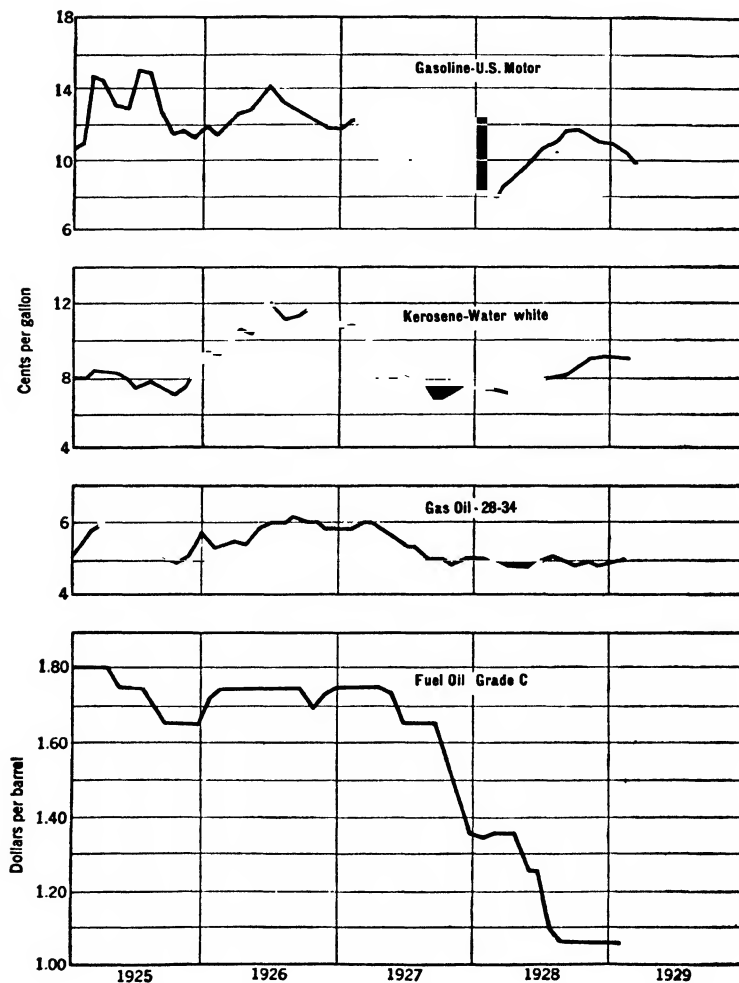


FIG. 3.—Trend of refined product prices—New York Harbor.

From this point we shall attempt to develop the subject as a case study of the means by which an oil company with a system of budgetary control deals with price changes. The presentation will be most useful if we exhibit

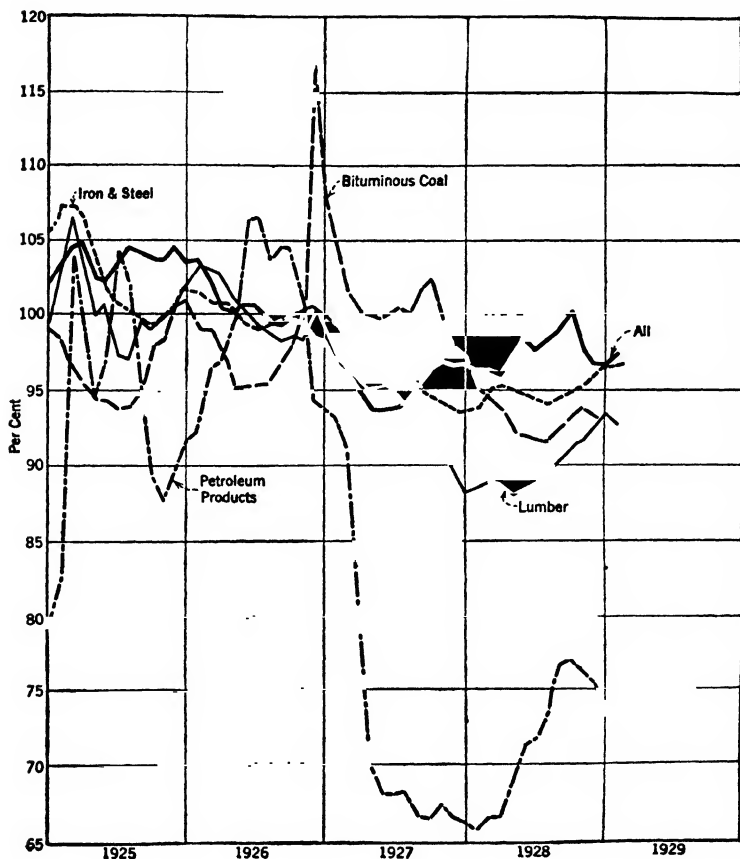


FIG. 4.—Wholesale commodity price movement—U. S. Bureau of Labor statistics (1926—100 per cent).

that part of the oil company's budget system which is directly affected by price fluctuations, and actually work through the budget certain assumed price changes.

In observing the forms which are shown in the following pages you will please bear in mind that the figures shown are not the actual figures of any existing company. While the figures are fictitious, nevertheless they have been prepared with reference to giving as true a reflection of price fluctuations and seasonal factors as though actual figures had been used.

Let us now give mental birth to this oil company which with high originality we shall christen the "X Oil Company." The X Oil Company refines crude oil and markets the products. Its other operations are carried on through three subsidiaries, the A Producing Company, the B Pipe Line Company and the C Crude Oil Purchasing Company. The A Producing Company handles all producing activities—that is, all operations concerned with leasing and developing oil lands and actually getting the oil out of the ground. The B Pipe Line Company carries that part of the A Producing Company's crude, which is available to its lines, to the X Company's refineries. The C Crude Oil Purchasing Company buys a part of the A Producing Company's production and such additional crude as the X Oil Company's refineries require which cannot be procured directly from the A Producing Company.

TABLE 1.—PRICE VALUATIONS, CRUDE OIL AND REFINED PRODUCTS, JAN. 1, 1925, TO FEBRUARY, 1929

	a Number of changes	b Range		c Per cent change high from low
		Low	High	
Crude Oil				
West Texas.....	5	\$.60	\$ 1.05	75
Gulf Coastal—Grade A.....	8	1.20	2.00	67
Illinois.....	15	1.37	2.37	73
Oklahoma, Kansas, N. & C. Texas, 37.0° to 37.9° Gravity...	15	1.23	2.37	93
Pennsylvania—Bradford, Allegany..	30	2.65	4.10	55
Refined Products				
New York Harbor				
Gasoline.....	..	8.0¢	15.1¢	89
Kerosene.....	..	6.4	12.0	88
Gas oil.....	..	4.6	6.1	33
Fuel oil.....	..	\$ 1.05	\$ 1.80	71
Tank wagon—Gasoline				
Newark.....	27	13.5¢	19.0¢	41
Boston.....	30	15.0	22.0	47
New York.....	25	15.0	22.0	47
Philadelphia.....	30	12.0	21.0	75

It is assumed that during 1929 the X Oil Company will market 1,000,000,-000 gallons of gasoline of which 800,000,000 gallons will be domestic dealer sales and 200,000,000 gallons bulk sales. In order to produce this volume of gasoline it will be necessary for this company's refineries to run 48,000,000 barrels of crude.

It is further assumed that the company produces from its own wells enough crude for its refinery requirements, but that only one-half of this production is actually available for transportation to the company's refineries through its own pipe line, and that the balance of the production is sold to other users of crude. In order, then, that the refinery crude requirements may be met, it will be necessary to purchase the other 50 per cent of its requirements, and so we assume that 24,000,000 barrels of crude will be purchased and transported to the refineries by the pipe line, along with the 50 per cent of the company's own production which is available.

This oil company's system of budgetary control is composed of financial and operating forecasts. The financial forecasts consist of:

1. Net income.
2. Cash receipts and disbursements.
3. Capital expenditures.

The budgets which are affected by price changes are net income and cash receipts and disbursements.

Table 2 is the consolidated 1929 net income forecast for the X Oil Company and its subsidiaries. It is dated Apr. 30. The first four columns embody the income figures of the four operating units of the X Oil Company group previously described. Column e combines the separate company figures into a consolidated total, which is the present view of 1929 net income. The next column f reflects an earlier view. From column f we conclude that this forecast of Apr. 30 represents a revision of some earlier forecast. That is a correct conclusion as will develop later. The last column g embodies 1928 actual figures.

The first three lines deal with the first quarter, Jan. 1 to Mar. 31, in terms of a comparison of the actual net income for the first quarter of 1929 with the estimate for that period and with the actual for 1928. We then have estimates of net income for each of the following three months—April, May and June. That is followed by an estimate for the balance of the year. The next line 8 represents the present view for the year, that is, the combination of lines 2 and 4 to 7. The following lines provide for the deductions of federal income taxes and preferred and common dividends, leading to net income to surplus and earnings per common share figures.

Underlying this master forecast of net income, of course, are the detailed financial and operating forecasts of the parent company and each subsidiary company.

This Apr. 30 forecast of 1929 net income is the latest of a series of forecasts, the first of which was set up in November, 1928. In November the management of each company of the X group formulates operating programs for the ensuing year, which are cast in the form of financial estimates, by quarters, of net income, cash and capital requirements. Before the first of the year

they are reviewed, revised if necessary, and ratified by the president in conference with his executive associates. Beginning with January, the budgets are revised monthly so that actual performance figures may be substituted for estimates, and so that effect may be given to any changes in prices or operating plans during the balance of the year. Revisions also take place at such other times as marked price or operating changes occur.

TABLE 2.—X OIL COMPANY AND SUBSIDIARIES. FORECAST OF 1929 NET INCOME, APR. 30, 1929

	a	b	c	d	e	f	g
	A Pro- duc- ing Com- pany	B Pipe Line Com- pany	C Crude Oil Pur- chas- ing Com- pany	X Oil Com- pany	Total (a to d)	Pre- vious view for year	1928 actual
1 Jan. 1 to Mar. 31							
2 Estimate—1929	\$2,400	\$1,800	\$ 600	\$1,500	\$ 6,300	\$ 6,500	\$
3 Actual—1929.....	2,500	1,700	625	1,400	6,225		
4 Actual—1928.....	2,000	1,500	550	1,000	5,050		5,050
5 Estimate—Apr.....	800	600	200	800	2,400	2,500	3,000
6 May.....	900	675	200	900	2,675	2,800	3,500
7 June.....	1,000	750	200	1,200	3,150	3,300	4,000
8 Balance of year	4,500	3,375	1,200	4,600	13,675	14,000	18,450
9 Present view for year (2 + 4 to 7).....	\$9,700	\$7,100	\$2,425	\$8,900	\$28,125	\$29,100	\$34,000
10 Federal income taxes.....					3,375	3,492	4,000
11 Available for preferred dividends.....					\$24,750	\$25,608	\$30,000
12 Preferred dividends.....					5,000	5,000	5,000
13 Available for common dividends.....					\$19,750	\$20,608	\$25,000
14 Common dividends.....					10,000	10,000	10,000
15 Net income to surplus.....					\$ 9,750	\$10,608	\$15,000
16 Earnings per common share.....					\$ 1.98	\$ 2.06	\$ 2.50

NOTE.—All figures expressed in thousands except Line 15.

What has been said of the net income budgetary procedure also applies in general to the budgeting of cash. Table 3 is the consolidated 1929 cash forecast for the X Oil Company and its subsidiaries. It is obvious that price fluctuations of crude and refined products will affect cash receipts, that is, collections from crude oil and refined products sales, and cash disbursements for crude purchases.

It has seemed necessary to outline the general budgetary procedure of the X Oil Company to this extent in order to establish a basis for considering the element of price fluctuations. We now address ourselves to that question. How does the X Oil Company which, like any other oil company, is itself unable to control the prices at which it buys its raw material—crude oil—and sells its finished refined products, proceed in forecasting prices?

TABLE 3.—X OIL COMPANY AND SUBSIDIARIES. FORECAST OF 1929 CASH RECEIPTS AND DISBURSEMENTS, APR. 30, 1929

	a Actual Jan. 1 to Apr. 30	b c d e Estimates				f Present view for year	g Previous view for year
		May	June	July	Balance of year		
Receipts							
1 Collections from							
2 Crude oil sales . . .	\$ 12,000	\$ 3,400	\$ 3,800	\$ 3,800	\$ 13,000	\$ 36,000	\$ 36,500
3 Refined product sales . .	78,000	29,000	33,000	38,000	72,000	250,000	250,500
4 Other	1,600	400	400	400	2,200	5,000	4,900
5 Total receipts	\$ 91,600	\$32,800	\$37,200	\$42,200	\$ 87,200	\$291,000	\$291,900
Disbursements							
6 Crude purchases	\$ 13,000	\$ 3,000	\$ 3,000	\$ 3,000	\$ 15,000	\$ 37,000	\$ 37,500
7 Operating—Production . .	12,000	3,000	3,000	3,000	15,000	36,000	35,700
8 Refining	16,000	4,000	4,000	4,000	20,000	48,000	48,200
9 Transportation	10,000	2,500	2,500	2,500	12,500	30,000	29,500
10 Sales	16,000	7,000	8,000	9,000	20,000	60,000	60,500
11 Other	10,000	2,500	2,500	2,500	12,500	30,000	29,600
12 Capital investments . . .	15,000	5,000	4,000	3,000	9,000	36,000	37,000
13 Dividends	3,750	1,250	2,500	.....	7,500	15,000	15,000
14 Other non-operating . .	5,000	1,000	1,000	1,000	6,000	14,000	15,000
15 Total	\$100,750	\$29,250	\$30,500	\$28,000	\$117,500	\$306,000	\$308,000
16 Surplus or deficit	\$ 9,150*	\$ 3,550	\$ 6,700	\$14,200	\$ 30,300*	\$ 15,000*	\$ 16,100*
17 Balance—Beginning of period . . .	40,000	30,850	34,400	41,100	55,300	40,000	40,000
18 Balance—End of period	\$ 30,850	\$34,400	\$41,100	\$55,300	\$ 25,000	\$ 25,000	\$ 23,900

NOTE.—All figures are expressed in thousands.

*Indicates red figures.

The task of forecasting prices is based primarily upon estimates of future supply and demand, both in respect to crude oil and its products. A careful study is made of current statistics and each month a detailed estimate is drawn up showing expected future production of crude oil, gasoline, etc., in the United States for a period of months ahead. These estimated figures are then compared with estimated demand, and after seasonal and other corrections are made, it is noted whether oil will be going to storage or withdrawn from stock. In this way, the statistical position of the industry is

constructed in advance, and from the preconstructed statistics conclusions as to probable price changes are drawn.

Under the X Oil Company procedure the price forecasts, as well as the forecasts of production, refining, and sales volumes, originate with the management representatives of the operating units. If we note Fig. 5 which shows this flow of price forecasts it will serve to fix the procedure in our minds. These forecasts flow to the headquarters Budget Department. This Department assembles the price estimates on a form represented by Table 4. This is submitted to the company's consulting petroleum economist for his comments and recommendations, and to the headquarters functional executives

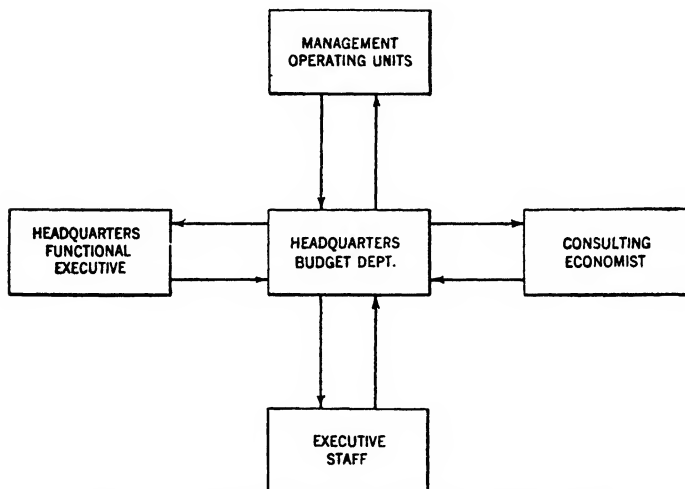


FIG. 5.—X Oil Company flow chart of price forecasts

in general charge of the several operations to which the respective price forecasts apply for their recommendations. The form then goes, with these comments and recommendations, to the company's executive staff, where it is approved with or without revisions. The price forecasts thus approved are relayed by the budget department to the operating units from which the budget estimates originated, where the prices are applied to volume estimates, and in that way enter into the financial forecasts of net income and cash receipts and disbursements—first into the forecasts of the several operating departments and companies, and finally into the master forecasts of income and cash shown in preceding charts.

We are now prepared to consider the effect of a change in commodity prices upon the net income and cash forecasts of the X Oil Company. As a simple, concrete means of presenting this, let us assume that the price of all grades of crude produced or purchased by the X Oil Company were cut 15 cents a

barrel, and that a price reduction in gasoline of 1 cent a gallon on domestic dealer sales and of $\frac{1}{2}$ cent a gallon on bulk sales took place. Actually cuts in crude and gasoline are rarely simultaneous, reduction in gasoline prices usually lagging several days or weeks behind crude cuts or even taking place without change in raw material prices. We shall also assume that these price reductions continue in force for the remainder of 1929. We shall further assume that the inventories of the X Oil Company and its subsidiaries at Apr. 30 were carried at market prices, and that due to this price reduction in crude and gasoline these inventories must be written down to the new market price. This adjustment will be a charge to net income.

TABLE 4.—X OIL COMPANY AND SUBSIDIARIES. PRODUCING, REFINING AND SALES UNITS, 1929 ESTIMATED UNIT PRICES

a Product	b Unit	c	d e		f g		h i		j k		l m	
		Actual March	Apr.		May		June		July		Balance of year	
			Pres.	Prev.	Pres.	Prev.	Pres.	Prev.	Pres.	Prev.	Pres.	Prev.

Obviously these changes invalidate the forecasts of net income and cash dated Apr. 30, making necessary a revision thereof. This revision is undertaken by the headquarters budget department and is not a very complicated process, as will be seen from Table 5 which may be regarded as a working paper calculation of the effect of the assumed price changes on net income and cash estimates. In following the calculation on this form you will please note that the left-hand column represents net income and the right-hand column cash, and that the red figures represent decreases in net income and cash, and the black figures represent increases in net income and cash.

We note that over the balance of the year, i.e., May 8 to Dec. 31, the producing subsidiary estimates its crude oil production at 32 million barrels. A decrease of 15 cents per barrel on this production represents a shrinkage in income of \$4,800,000. The cash effect of this price change is measured by the portion of the production which is sold to other buyers than the X Oil Company; that according to our assumption is 50 per cent, or 16 million barrels, which at 15 cents per barrel reduction amounts to a decrease in cash revenue of \$2,400,000.

The assumed inventory of the A Producing Company at Apr. 30 is 3,000,000 barrels of crude, which because of the 15 cents price cut, must be written down

\$450,000. Thus the effect of the crude price change upon the A Producing Company has been to reduce the net income estimate, for the period May

TABLE 5.—X OIL COMPANY AND SUBSIDIARIES. CALCULATION OF THE EFFECT OF ASSUMED PRICE CUTS ON NET INCOME AND CASH

Assumptions:

1. Crude oil decreased 15¢ per barrel
2. Gasoline—domestic dealer decreased 1¢ per gallon, bulk decreased $\frac{1}{2}$ ¢ per gallon
3. Period affected—May 8 to Dec. 31
4. Inventories at Apr. 30, carried at market and adjusted to include effect of above price changes

	a	b	c Net income	d Cash
	A Producing Company			
1	Oil earnings.....	32,000 M bbl. at 15¢ per bbl.	\$4,800*	
2	Accounts receivable.....	16,000 M bbl. at 15¢ per bbl.	.....	\$2,400*
3	Inventories.....	3,000 M bbl. at 15¢ per bbl.	450*	
4	Total.....		\$5,250*	\$2,400*
	C Crude Oil Purchasing Com- pany			
5	Accounts payable	16,000 M bbl. at 15¢ per bbl.	.....	2,400
6	Inventories.....	10,000 M bbl. at 15¢ per bbl.	1,500*	
	X Oil Company			
7	Sales—Gasoline—Domestic	535 Mil. gal. at 1¢ per gal.	5,350*	
8	Spot	150 Mil. gal. at $\frac{1}{2}$ ¢ per gal.	750*	
9	Accounts receivable.....	.....	.....	5,350*
10	Cost of sales			750*
11	Crude run to stills.....	32,000 M bbl. at 15¢ per bbl.	4,800	
12	Inventories—Crude.....	2,000 M bbl. at 15¢ per bbl.	300*	
13	Gasoline.....	75 Mil. gal. at 1¢ per gal.	750*	
14	Total.....		\$2,350*	\$6,100*
15	Net effect of crude oil price change.....		\$2,250*	
16	Net effect of gasoline price change.....		6,850*	6,100*
17	Total effect.....		\$9,100*	\$6,100*

NOTE.—Black figures represent additions and red figures* represent deductions. Figures in Columns c and d are expressed in thousands.

8 to Dec. 31, \$5,250,000 and to reduce the forecast of cash revenue \$2,400,000 for this same period.

The crude cut affects the C Crude Oil Purchasing Company favorably as to cash, in that the purchase program of 16 million barrels over the balance

of the year from outsiders will require \$2,400,000 less cash than if the crude price had remained unchanged. The effect upon the C Crude Oil Purchasing Company's net income—\$1,500,000 is measured by the write-down of 15 cents per barrel on the 10,000,000 barrels which are assumed to be in storage as of Apr. 30.

We now turn to the parent company, the X Oil Company, to complete the calculation of the effect of the crude price cut. It will be seen (line 11) that the effect of the 15 cents per barrel cut in cost of crude run to stills in the company's refineries from this date to the end of the year is to reduce this cost \$4,800,000, which means that net income will increase a like amount. The crude inventories, however, assumed to be 2,000,000 barrels at Apr. 30, must be written down \$300,000 to give effect to this price reduction (line 12).

Turning now to the gasoline price cut, it will be seen (line 7) that the one cent per gallon cut in domestic dealer sales of 535,000,000 gallons will reduce both income and cash (line 9) \$5,350,000, and that the $\frac{1}{2}$ cent per gallon price cut in bulk sales will also reduce both income and cash by \$750,000.

The remaining element which must be considered in calculating the effect of the gasoline price cut is the company's gasoline inventory at Apr. 30 of 75,000,000 gallons, which has been written down 1 cent, involving a reduction in net income of \$750,000.

By way of recapitulation, the net effect of these price changes on net income and cash is to decrease the A Producing Company's net income by \$4,800,000, which is offset by an increase in net income of the X Oil Company. That is to say, what the A Producing Company loses in net income through reduced oil earnings, the X Oil Company adds to net income through the reduction in the cost of its raw material.

The result of the crude oil price reduction on the consolidated net income is a reduction of \$2,250,000, all of which is due to writing down inventories to the new market level.

The gasoline price cut reduces net income \$6,850,000, of which \$750,000 represents a write-down of inventories and \$6,100,000 a reduction in sales realizations.

The combined effect of the foregoing upon net income is to reduce it \$9,100,000. It will be noted that cash is reduced \$6,100,000. The difference of \$3,000,000 between the reduction in net income and cash is due to writing down inventories in that sum.

It is interesting to note that the crude cut has not affected cash, for the reason that the reduction in accounts receivable of the A Producing Company is exactly offset by a decrease in the accounts payable of the C Purchasing Company.

We are now prepared to reconstruct the forecasts of net income and cash in accordance with the foregoing calculations. The elements which must be revised to reflect the effect of these price changes upon net income forecast (Table 6) are lines 5, 6, 7, and 8, and columns a, c, d, e, and f. You will note that what was the "present view for the year" on the Apr. 30 forecast, which then appeared in column e, now becomes the "previous view for the year" and appears in column f. For purposes of simplifying this explanation, the working sheet dealt merely with figures for the entire period from May 8 to Dec

31 whereas the actual process of revising the forecast, of course, involves breaking down this total change into the respective periods affected.

The effect of these changes in terms of the consolidated figures is to change an Apr. 30 forecast of May net income of \$2,675,000 to a loss of \$1,425,000. Three million dollars of this decrease is due to writing down inventories in this amount. The June estimate declines from \$3,150,000 to \$1,850,000, and the estimate for the balance of the year of \$13,675,000 becomes \$9,975,000; the total income previously estimated at \$28,125,000 now becomes \$19,025,000. After providing for taxes and preferred dividends, the amount available for common dividends is now \$11,742,000, as against the previous forecast of \$19,750,000. Stated in terms of estimated earnings per common share, we now have \$1.17 as against the former estimate of \$1.98, a reduction of 81 cents a share.

TABLE 6.—X OIL COMPANY AND SUBSIDIARIES. FORECAST OF 1929 NET INCOME, MAY 8, 1929

		a	b	c	d	e	f	g
		A Producing Company	B Pipe Line Company	C Crude Oil Pur- chasing Company	X Oil Company	Total (a to d)	Pre- vious View for year	1928 actual
1	Jan. 1 to Mar. 31							
2	Estimate—1929	\$2,400	\$1,800	\$ 600	\$1,500	\$ 6,300	\$ 6,300	\$
3	Actual—1929	2,500	1,700	625	1,400	6,225	6,225	
4	Actual—1928	2,000	1,500	550	1,000	5,050	5,050	5,050
5	Estimates—Apr.	800	600	200	800	2,400	2,400	3,000
6	May	225*	675	1,300*	575*	1,425*	2,675	3,500
7	June	250	750	200	650	1,850	3,150	4,000
8	Balance of year ..	1,125	3,375	1,200	4,275	9,975	13,675	18,450
9	Present view for year (2 + 4 to 7)	4,450	7,100	925	6,550	19,025	28,125	34,000
10	Federal income taxes					\$ 2,283	\$ 3,375	\$ 4,000
11	Available for preferred dividends					\$18,742	\$24,750	\$30,000
12	Preferred dividends					5,000	5,000	5,000
13	Available for common dividends					\$11,742	\$19,750	\$25,000
14	Common dividends					10,000	10,000	10,000
15	Net income to surplus					\$ 1,742	\$ 9,750	\$15,000
16	Earnings per common share					\$ 1.17	\$ 1.98	\$ 2.50

NOTE.—All figures expressed in thousands except Line 15.

*Indicates red figures.

Table 7 shows how these price changes bear upon the cash forecast, the columns and lines marked by arrows indicate the periods and items affected.

Passing over any detailed reference to these, the net effect on cash is to reduce the Apr. 30 estimate of cash at the year end of \$25,000,000 to \$18,900,000.

In addition to fluctuations of crude prices and of the prices of gasoline and other refined products, which are the price fluctuations of primary importance, there are, of course, many other price fluctuations which, while secondary in importance, have nevertheless not always an unimportant effect on net income and cash of an oil company. Fluctuations in transportation

TABLE 7.—X OIL COMPANY AND SUBSIDIARIES. FORECAST OF 1929 CASH RECEIPTS AND DISBURSEMENTS, MAY 8, 1929

	a	b	c	d	e	f	g
	Actual Jan. 1 to Apr. 30	Estimates				Present view for year	Previous view for year
		May	June	July	Balance of year		
Receipts							
Collections from							
Crude oil sales	\$ 12,000	\$ 3,060	\$ 3,420	\$ 3,420	\$ 11,700	\$ 33,600	\$ 36,000
Refined product sales	78,000	27,975	31,850	36,725	69,350	243,900	250,000
Other	1,600	400	400	400	2,200	5,000	5,000
Total receipts	\$ 91,600	\$31,435	\$35,670	\$40,545	\$ 83,250	\$282,500	\$291,000
Disbursements							
Crude purchases	\$ 13,000	\$ 2,700	\$ 2,700	\$ 2,700	\$ 34,500	\$ 34,600	\$ 37,000
Operating—Production.	12,000	3,000	3,000	3,000	15,000	36,000	36,000
Refining	16,000	4,000	4,000	4,000	20,000	48,000	48,000
Transportation	10,000	2,500	2,500	2,500	12,500	30,000	00,000
Sales	16,000	7,000	8,000	9,000	20,000	60,000	60,000
Other	10,000	2,500	2,500	2,500	12,500	30,000	30,000
Capital investments	15,000	5,000	4,000	3,000	9,000	36,000	36,000
Dividends	3,750	1,250	2,500	.....	7,500	15,000	15,000
Other non-operating	5,000	1,000	1,000	1,000	6,000	14,000	14,000
Total	\$100,750	\$28,950	\$30,200	\$27,700	\$116,000	\$303,600	\$306,000
Surplus or deficit	\$ 9,150*	\$ 2,485	\$ 5,470	\$12,845	\$ 32,750*	\$ 21,100*	\$ 15,000*
Balance—Beginning of period	40,000	30,850	33,335	38,805	51,650	40,000	40,000
Balance—End of period.	\$ 30,850	\$33,335	\$38,805	\$51,650	\$ 18,900	\$ 18,900	\$ 25,000

NOTE—All figures are expressed in thousands.

* Indicates red figure.

costs, for example, may have a very appreciable effect. Price changes also occur in the multitude of materials and supplies used in the production and refining of crude oil. Under the budgetary system of the X Oil Company, however, these minor price changes are reflected in the regular monthly revisions of forecasts.

The conclusions which are most pertinent to the subject are first, that while price fluctuations do complicate the process of budgeting, it is equally true that price fluctuations emphasize the need of budgetary control, and second, that sound budget procedure assures facility in revising forecasts and, where revision is simple, price or other fluctuations cause little concern to those who operate the budget.

CHAPTER III

INCORPORATION AND THE POSITION OF THE STOCKHOLDER

THE INCEPTION OF THE CORPORATION

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Corporation Defined. A corporation is an association of natural persons authorized by the sovereign power of the state to act in its own proper person, as a legal entity, having existence, citizenship, and a domicile separate and apart from the persons who compose it and completely merging their individuality. The corporation is sometimes referred to as a "fiction of the law," the purpose of which is to enable a group of individuals to transact business in a more convenient way than would be possible if they retained their identity as individuals. It should be borne in mind, however, that the so-called corporate fiction does not merge the individuality of the members to the extent that they cannot, today, be recognized and held accountable as individuals when it becomes evident that they are employing the fiction for a fraudulent purpose. In a recent publication on the subject of the disregard of the corporate fiction, I. Maurice Wormser aptly states:

. . . in the present condition of the authorities a corporation will be looked upon by the courts as a legal personality, for ordinary purposes in everyday business transactions, as a general principle and until adequate reason to the contrary appears; but the fiction will be disregarded and the law will look to see the men and facts behind the fiction whenever it is employed "to defraud creditors, to evade an existing obligation, to circumvent a statute, to achieve or perpetuate monopoly, or to protect knavery and crime."¹

It need scarcely be stated that no fraud is deemed to be involved by virtue of the fact that individuals incorporate to avoid personal responsibility for debts, and that people do frequently incorporate for this express purpose.

The Advantages of the Corporation as a Means of Conducting Business. The principal advantages of functioning as a corporation rather than as an association of individuals are:

First, the Stockholders' Immunity from Personal Liability. Stockholders of a corporation are, in general, immune from personal liability for debts contracted by the corporation, the extent of their liability being the unpaid balance due on their subscriptions for stock. This personal immunity is

¹ "The Disregard of the Corporate Fiction and Allied Corporate Problems," p. 40, Baker, Voorhis and Company, 1927.

sometimes limited by the constitution or laws of a particular state, or because of the existence of special circumstances which estop an individual stockholder from denying the assumption of personal liability, but when a statute extends the personal liability of stockholders, it usually applies only to obligations of a particular nature designated in the statute, such as liability to operatives for services rendered, or liability for the unpaid balance due on stock of an insolvent subscriber. It is common for the state legislatures to impose personal liability upon stockholders of banks in an amount equal to the par value of their stockholdings in addition to the unpaid balance due on their subscriptions for stock.

Second, the Capacity for Perpetual Existence. A corporation as distinguished from an association of individuals, such as a partnership, has the capacity for perpetual existence, that is, the transfer of shares of stock by one individual to another and the consequent introduction of strangers to the membership does not effect a dissolution of the corporate body as it would in the case of a partnership.

Third, Functioning as a Separate Entity. The corporation is a separate entity distinct from the persons who may own its stock and control its destinies and, as such, is able in its own name to acquire and convey property; to enter into contracts; to sue and be sued; and to exercise such other powers as the legislature may have granted to it, in the same manner as a natural person may do. Although the acts of a corporation are of necessity performed by individuals, as its officers or agents, the individuals are merely the instrumentalities through whom the entity functions, and their acts are the acts of the corporation for which the corporate entity is responsible.

The Corporation Distinguished from a Partnership. A corporation and a partnership are two distinctly different types of organization. A partnership comes into being by mere agreement between the parties, while a corporation cannot be so formed but must acquire its existence by grant of authority from the state legislature. The members of a partnership do not lose their identity as individuals, there being no legal entity created as in the case of a corporation, and the business is transacted and the property owned by all the members jointly in their individual capacity. The retirement or death of one of the partners or the transfer of his share in the business, effects a dissolution of the firm, in the absence of provision to the contrary having been made in the partnership agreement, and the continuance of the business after that time depends upon a further voluntary agreement being entered into between the surviving partners. The reverse is true of a corporation, as has been stated above. Each member of a partnership is an agent for the firm with respect to matters within the scope of the partnership business, while a corporation acts only through its board of directors, or through agents to whom authority is especially delegated by the board. The members of a partnership are personally responsible to the extent of their private fortunes as well as their interest in the partnership business, for debts incurred by the firm, while no personal responsibility, in general, attaches to the stockholders of a corporation.

The Corporation Distinguished from a Joint Stock Company. The distinction between a corporation and a joint stock company is less clearly defined.

Basically the joint stock company resembles a partnership, for it comes into being as a result of the mere agreement of the members instead of acquiring its existence from the state, and no legal entity is created, the company being simply the sum total of its members. But in practical effect the corporation and the joint stock company are more nearly akin. The members of a joint stock company, like those of a partnership, are individually liable for the obligations incurred by the company, but the legislatures in many of the states protect the members of joint stock companies from liability until all legal remedies against the collective body have been exhausted. The legislatures may limit and, in some instances, have limited the individual liability of members of joint stock companies even further. A joint stock company cannot acquire or convey property, and cannot bring or defend suits in the company name, as a corporation may do. Dealing with property and participation in law suits must be in the individual names of the members, numerous though they may be. But property may be dealt with and suits instituted by an officer of a joint stock company as trustee for the several members, and this, for practical purposes is as effective as though the name of the company could be used. A joint stock company, in the absence of statutory provision, cannot sue one of its members, nor can it be sued by them because in bringing such a suit it would occupy the position of both plaintiff and defendant. The legislatures, however, in some of the states authorize the bringing of suits by a joint stock company against its members, and vice versa. There is, of course, no objection to suits in which a corporation and one of its stockholders are plaintiff and defendant respectively, owing to the fiction of the corporate entity. Another characteristic which the corporation has in common with the joint stock company is the fact of its acting through the official agency of a board of directors, and that the individual members of a joint stock company are not, as in the case of a partnership, agents for the body by virtue of their membership.

From the foregoing it will be observed that the distinction between corporations and joint stock companies may often be difficult of discernment, especially in jurisdictions where the legislatures have endowed joint stock companies with the essential attributes associated in early times only with corporations. In some cases the distinction has been so ill defined that the courts have differed in their opinions as to whether an association was a corporation or a joint stock company, and foreign jurisdictions have deemed as corporations, for tax purposes, associations recognized in their native state as joint stock companies.

The Purposes for Which a Corporation May Be Formed. As a corporation is purely a fiction of the law it follows that it can be created only for the purposes contemplated by the laws (sometimes referred to as statutes) of the state from which it is to acquire its existence. In some jurisdictions the language of the statute is very general, authorizing the formation of corporations "for the purpose of carrying on any lawful business or businesses of any kind or nature whatsoever," in which case there is no restriction as to the purpose for which a corporation may be formed excepting that it must be a purpose compatible with the constitution and general laws of the state and the United States. In other jurisdictions the language of the statute is

specific, enumerating the purposes for which a corporation may be formed, as: "Corporations may be formed for any of the following purposes: 1 . . . 2 . . . 3 . . . 4 . . .," in which case the purpose for which the corporation is being created must come within the fair import of one of the purposes enumerated.

Stock and Non-stock Corporations. In general corporations are divided into two classes: stock corporations and non-stock, or membership, corporations. Stock corporations are those having a capital stock, the shares of which are issued to the members, known as stockholders, in return for their contribution to the capital, and on which shares the company may make periodical payments, called dividends, which represent a part of its surplus. Corporations for profit are generally organized in this form. Non-stock corporations are those having no capital stock, and in which the membership is evidenced by a certificate which entitles the member to whatever privileges are accorded him by the company's Charter and By-laws. The membership form of corporation is utilized for ideal purposes, that is to say, for societies organized to render a social, religious, charitable, or mutually beneficial service.

The Function of Promoters. The individuals who undertake to organize a corporation are known as promoters. From the common usage of the word "promoter" it has perhaps come to depict in the minds of many, the zealous stock salesman who paints his bargains in all too glowing colors in an attempt to disarm the circumspect purchaser. In reality the function of promoters is of major importance. They are the individuals with whom originates the fundamental concept which is to be the motivating force of the corporate body. They have a unique idea of either commercial or ideal value, but one which can be realized only by the contribution of capital and/or services by many individuals. It is, then, for the realization of this fundamental concept that they promote a corporation. Promoters take care of the necessary formalities incident to the inception of the corporation, that is, they arrange for the preparation of the corporate charter (also referred to as the articles of incorporation of the certificate of incorporation); procure execution of the charter by the required number of persons, known as incorporators; submit the proposed charter to the Secretary of State or other officer designated by the statute; procure the certificate of incorporation from the state; obtain subscriptions to the capital stock; raise funds to cover expenses incurred pending commencement of the corporate existence; and enter into preliminary contracts.

Liability on Contracts Made by Promoters. Promoters may or may not be personally liable on contracts made on behalf of an intended corporation, depending upon the nature of their agreement with the contractor, that is, the individual furnishing the material or service desired. It is the general rule that if the contract is made in the name and solely upon the credit of the intended corporation no personal liability will attach to the promoters unless the contract is one which the corporation, when formed, has not the power under its Charter to make. But if the contract is made in the name and upon the personal credit of the promoters, (and this is sometimes necessary on account of the difficulty of inducing the extension of credit to a non-existent

company) the promoters are personally responsible for the performance of the contract, notwithstanding the fact that it was made solely for the benefit of the corporation. Promoters may be relieved of responsibility in such cases by the corporation's subsequently adopting the contract and entering into an agreement with the contractor assuming the sole responsibility for its performance.

Procedure Required in Forming a Corporation. Persons concerned with corporate management should be familiar in a general way with the steps necessary to bring a corporation into existence. As the legislature of each of the states of the Union outlines the procedure to be followed in creating a corporation under its jurisdiction, and as the details of the procedure vary in the different states, a résumé of the essential steps generally required by a majority of the states must suffice.

The Controlling Law: Special or General Act of the Legislature. The legislatures in the exercise of their sovereign powers may create corporations, either by special enactment, applicable only to a particular corporation, or by enacting a general law prescribing the conditions upon which any and all individuals may incorporate. The constitutions of a majority of the states at the present time, prohibit the granting of corporate powers by special act of the legislature, with specified exceptions, and require the legislature to adopt a general enabling act under which individuals may band themselves together as a corporation. A general enabling act is not necessarily a single law—it may be a series of laws, each of which governs a particular type of corporation. For example, a state may enact a general corporation law applicable to all types of corporations and separate laws applying specifically to particular types of corporations. A general enabling act eliminates the possibility of discrimination by the legislature for it amounts to a general regulation of the subject which is available to any and all persons who come within the terms of the statute and who comply with the conditions imposed thereby. Accordingly, the usual method of incorporating in this country is by compliance, on the part of individuals, with the general laws of the state in which the corporation is to be formed.

Notice of Intention to Incorporate. The first step necessary in forming a corporation under the general laws of some states is the publication of notice on the part of the incorporators of their intention to form a corporation.

Preparation of the Charter. The next step is the preparation of the proposed charter or, as it is sometimes called, the articles of incorporation, or the certificate of incorporation. The charter must be drawn with the utmost care and must include statements complying in every detail with the controlling statute and must be executed and acknowledged before a notary public by the incorporators or the directors named in the charter, or by such other persons as may be specified by the statute.

Contents of the Charter. The statements commonly required to be set forth in the articles of incorporation are as follows:

1. The name of the proposed corporation. The liberty of the incorporators to select any desired name is subject to whatever restrictions may be imposed by the statute. Thus, many states make it obligatory to include in the corporate name the word "Corporation," "Company," "Incorporated."

"Inc.," "Limited," or the like. A further restriction is that the name of an individual cannot be made a part of the corporate name unless he consents to its use. To avoid confusion and to prevent unfair competition most states forbid the use of any name similar to that of another corporation already incorporated, or registered to do business in the state, or a name previously reserved for an intended corporation.

2. The address of the office of the corporation in the state where the incorporation is proposed.

3. Reference to directors and to the original stock subscribers, or the incorporators. A statement as to the number of directors, (usually a minimum of three) which shall constitute the board, and the names and residences of those chosen to hold office for the first year, or until the first annual meeting of the members or stockholders, is usually required. In the case of stock corporations the names and residences of the original subscribers to the capital stock should be included, with a statement as to the number of shares subscribed by each, and in the case of membership corporations, the charter should set forth the names and residences of the incorporators.

4. The purpose for which the corporation is being formed. Most of the states require the charter to specify the purpose for which the corporation is being formed, the particular business it is intended to transact, and the powers and privileges that it proposes to exercise. As has already been stated, the purpose for which the corporation is being formed must be one sanctioned by the particular statute governing the incorporation and not repugnant to the Constitution or the general laws of the state or the United States.

5. Details regarding the stock. In the case of business corporations, as distinguished from corporations not created for pecuniary profit, it is usual for the statute to require a statement in the charter of substantially the following details regarding the capital and stock of the proposed corporation: The total authorized number of shares, the number of such shares that have no par value, the number of such shares that have a par value, and the par value thereof; a description of the several series and/or classes of shares, if the shares are to be classified or issued in series, and a statement of the number of shares in each class and/or series, and the designations, voting powers, preferences, the dividend, redemption, optional or conversion rights or restrictions, limitations or qualifications granted to or imposed upon the shares of each class or series; and the amount of paid-in capital with which the corporation will commence doing business.

If the corporation is to be a non-stock or membership corporation, it is customary to include a statement in the charter to that effect, irrespective of whether or not the statute specifically requires it.

6. The intended life of the corporation. A statement is included as to whether the life of the corporation is to be perpetual, or limited to a specified number of years, and if it is to be so limited, the number of years during which it is intended to operate.

7. Optional provisions. The statutes frequently specify that the articles of incorporation may include any further provisions which the incorporators may choose to insert regarding the regulation of the business and the conduct

of the affairs of the corporation, and considerable latitude is allowed to the incorporators in limiting or regulating the powers of the corporation or its directors, stockholders, or members, provided the limitations or regulations are not inconsistent with the enabling act or with the Constitution or general laws of the state.

8. Provision for the adoption of by-laws. It is customary for the Charter to provide for the adoption of by-laws to control the functioning of the corporation, whether or not the statute prescribes the inclusion of such provision.

Filing the Charter. When the proposed charter has been prepared in compliance with the requisites of the general enabling act of the state, it is filed with or submitted to, according as the statute directs, the Governor, the Secretary of State, or other ministerial officer designated by the statute. In some jurisdictions it must be accompanied by affidavits testifying to the amount of the capital already paid in, or the amount of stock already subscribed, and the extent of the payments made on such stock subscriptions.

Issuance of the License. The officer examines the charter, and having assured himself that it fulfills all the statutory requirements, he endorses it "filed," or "approved," or, as is required in some jurisdictions, issues to the incorporators a document known as the corporate charter or articles of incorporation, or certificate of incorporation. This document originates with the ministerial officer, but consists principally of a copy of the charter as proposed by the incorporators. The articles of incorporation must then be recorded at the place and within the time prescribed by the statute, and the recording fee and organization tax paid. Further mention will be made herein on the subject of taxes and recording fees.

Organization Procedure. The statutes generally prescribe a definite procedure to be followed by the corporation in perfecting its organization before it actually begins to function. The procedure outlined below is fairly representative of that prescribed by a majority of the states.

The Organization Meeting; First Directors' Meeting; Filing of Report of Organization. After the approval of the certificate of incorporation, and until directors are elected, the incorporators assume charge of the affairs of the corporation and, in the case of stock corporations, take such steps as are necessary to obtain subscriptions to its stock. A majority of the incorporators (in some cases any one incorporator) call the first meeting of the corporation at such time and place as may be designated in the notice. The statutes frequently require that the meeting be held within the state of incorporation. Notice of the meeting is published in a newspaper prescribed by the statute, or is sent to each of the incorporators and stockholders individually. At such meeting the incorporators, and, in the case of stock corporations, the subscribers to stock, perfect the organization by the choice of a temporary chairman and temporary secretary or clerk, and the election by ballot of the number of directors specified in its charter or required by statute. Subsequently a meeting of the directors is held, at which by-laws are adopted and officers elected. In several jurisdictions the statute requires as a condition precedent to the corporation's entering upon the regular conduct of its business, that the directors file with the Secretary of State what is known as a

report of organization containing various items of information testifying to the fact that the proper organization procedure has been followed. It usually contains statements such as that the directors and officers of the corporation have been duly elected and its by-laws adopted; and details as to the amount of stock subscribed and the extent of the payments made on the subscriptions.

Fees and Taxes Imposed by the State and Federal Governments. In the expenses necessarily incident to the creation and maintenance of a corporation, the fees and taxes imposed by the state and federal government play no small part. Therefore a word with respect to the nature and extent of the corporation taxes generally imposed should be of interest. There are various methods by which the states may secure revenue through the taxing of corporate interests, and in the absence of any regulatory provisions in the state constitution, the legislature may use its discretion as to which method it shall employ and also as to whether it shall employ one or several of such methods.

The Initial Fees and Taxes. *Incidental Fees.* First of all there are sundry small fees prescribed by the state to accompany the filing of documents and fees to reimburse the state for its services in performing such ministerial duties as the examination of, or issuance of, the certificate of incorporation, for furnishing certified copies of the certificate and for affixing to those documents the great seal of the state. These incidental fees usually aggregate from \$10 to \$35, depending upon the state of incorporation.

Charter Fee. The next initial fee prescribed by most of the states is one usually referred to as the organization or charter fee. In some jurisdictions the organization fee is graded according to the amount of the capital stock which the corporation is authorized by its charter to issue. In others it is graded according to the amount of the capital stock which the corporation intends to issue at once. As the rate varies in different jurisdictions it would be impracticable to make a general statement here as to what rate is specified, but the following are examples of the rates effective in three different states which will afford a general idea as to the probable extent of the organization fee.

1. 10 cents per \$1,000 on first \$1,000,000, plus 5 cents per each additional \$1,000 of authorized capital stock having a par value; and 10 cents for each 1,000 shares of the capital stock having no par value.

2. One-twentieth of 1 per cent of the authorized par-value stock; and 5 cents per share for no-par-value shares.

3. One-twentieth of 1 per cent of capital stock issued or to be issued at once; no-par-value shares taxed on the amount received or to be received therefor.

In practically every state in which the organization fee is graded the statute fixes a minimum amount to be paid, such as \$3, \$25, \$50, and some states fix a maximum also, such as \$150, \$600, \$3,000.

Federal Stamp Tax. A further initial fee in the form of a stamp tax is imposed by the federal government. Stock issued by the corporation is subject at the time of issuance to a stamp tax of 5 cents for every \$100 or fraction of \$100 of its par value, or, in the case of no-par-value stock, a stamp tax of 5 cents on every \$100 or fraction of \$100 of actual value. In the case of the actual value of no-par stock being less than \$100 the stamp tax is

computed at the rate of 1 cent for every \$20 or fraction of \$20 of actual value. In the case of stock which the corporation issues in the form of a certificate representing more than one share, the measure of the tax, in the case of par-value stock, is the face value of the certificate and not the face value of each separate share which it represents; and the measure of the tax in the case of no-par-value stock is the actual value of the certificate and not the actual value of each separate share which it represents; and this is true however large may be the number of shares a certificate represents.

Annual Fees and Taxes. In addition to these incidental and organization fees there are annual taxes to be paid. The states frequently impose two, three, or four kinds of annual corporate taxes, concurrently effective.

Annual Registration Fee. First, there is the annual registration fee which a few of the states prescribe. This is sometimes a fixed sum, such as \$15; or it may be based upon the amount of paid-in capital stock or other factor which the legislature may designate.

Annual Franchise Tax. The annual franchise tax (sometimes referred to as the license tax) is perhaps the most commonly employed. Occasionally it is fixed at a flat amount, sometimes as low as \$1, but more generally the states require that it be computed upon one or the other of the following bases: the amount of authorized capital stock; the amount of paid-up capital stock; the amount of stock issued and outstanding; the amount of stock subscribed, issued, and outstanding; or that the tax shall be computed according to one of two given methods, depending upon which will afford the state the advantage in revenue; or upon the amount of the corporate capital, property, and assets located and employed within the state; or upon an allocation of the net income of the corporation for the tax year represented by assets employed or business transacted within the state. Where the franchise tax is computed upon one of the above bases, the rate of tax is often graded according to the amount of stock, or income, or the value of the corporate property and assets, as the case may be.

Where the tax is based upon the amount of stock, or income, or the value of the corporate property and assets, the states usually fix a minimum annual tax, such as \$5, \$10, \$25, and some states fix maximum tax also. The rate of tax in different states, and the fixed maximum, if any, vary so sharply that a general statement cannot well be made as to the probable rates and amounts. Suffice it to say here that the lowest maximum franchise or license tax (in jurisdictions where the rate is graded) fixed in any state at the date of this writing is \$100, and the highest maximum, \$50,000. The fact of a maximum franchise tax being fixed affords an advantage to corporations employing very large capital, as will be noted later.

Other Annual Taxes. Other annual taxes sometimes imposed by the states are the income tax, the corporate excess tax, the excise tax, capital stock tax, occupational license tax, moneyed capital tax, and corporate loans tax.

Federal Income Tax. The United States Government imposes a further annual tax, known as the federal income tax. This tax is computed upon the basis of the entire net earnings of the corporation during the federal tax year, and is figured at the rate of 12 per cent. An exemption of \$3,000 is allowed if the earnings of the corporation are \$25,000 or less.

Matters to Be Considered in the Choice of a State. When a group of individuals contemplate banding themselves together into a corporate body, it becomes necessary to determine in what state they will apply for incorporation. At first blush it would seem natural to apply for incorporation in the state in which the incorporators reside or the state in which the corporate interests are principally to be located, but this is not necessarily the case. The structure of the corporation, the powers with which it may be endowed in its charter, and the initial taxes, and some types of annual taxes imposed upon it, as well as the qualifications of the incorporators and directors, are controlled exclusively by the law of the jurisdiction from which the corporation acquires its existence, and the corporation may be afforded a decided advantage by the laws of one state as against another.

There are several statutory provisions likely to affect the interests of the corporation, favorably or otherwise, depending upon the type of corporation being formed, the nature and extent of its proposed business operations, if it is a corporation for pecuniary profit, and the identity of its incorporators and directors. Such statutory provisions should be considered by the incorporators before determining in what state they shall apply for their charter.

Number and Qualifications of Incorporators and Directors. Most of the states prescribe a minimum of three incorporators and a minimum of three directors, but in a few jurisdictions no minimum number is specified. Some states prescribe also personal qualifications for incorporators and directors, such as that they shall be residents of the state, or citizens of the particular state or of the United States, or that they must be subscribers to the stock of the corporation. Others impose no such qualifications.

Organization and Stockholders' Meetings; Place of Holding. The meeting of the incorporators to perfect the organization is frequently, though not in every case, required to be held within the state. Some states permit stockholders' meetings to be held either within or without the state, while under the law of others a stockholders' meeting held outside the state would be invalid.

Personal Liability of Stockholders. Although it is the general rule that the extent of a stockholder's personal liability to creditors of the corporation is the unpaid balance due on his subscriptions for stock, there are a few jurisdictions where further liability is imposed. For example, one of the states renders stockholders personally liable for all obligations incurred by the corporate body unless their liability is specifically limited by a provision to that effect in the charter. Another state renders the solvent stockholders liable for the unpaid stock subscriptions of any insolvent subscriber, and a few states impose personal liability for labor performed for the corporation.

Cumulative Voting. Cumulative voting by the stockholders is permitted in many jurisdictions, though not universally. The following will serve as an illustration of what is meant by cumulative voting: Assume that the by-laws of a corporation reserve to the owner of each share of stock the privilege of casting one vote for each nominee for the board of directors. If the board is composed of, let us say, fifteen members, each share of stock may cast a total of fifteen votes for the board. In jurisdictions where the statute permits of

cumulative voting the charter or by-laws may reserve to the stockholder the right to cumulate his fifteen votes in favor of one or more of the nominees. This cumulation of the votes represented by a single share of stock is known as cumulative voting and, as stated above, is not permitted in all jurisdictions.

Regulations Affecting the Stock of the Corporation. The statutes frequently fix a minimum amount of authorized capital stock which the charter must stipulate; or they fix a minimum amount of the stock to be subscribed; or the amount to be paid in before the corporation can begin to function. If the activities and the assets of the proposed corporation are to be very limited, the incorporators would probably avoid organizing in such jurisdictions. Occasionally the statutes prescribe a limit as to the number of different classes of stock a company may issue. If the business activities are to be extensive and the capital large, the incorporators would no doubt prefer a state that imposes no limitation as to the number of classes of stock permitted.

Limitations as to the Amount of Indebtedness to Be Incurred and the Amount of Stock to Be Purchased. Only a few of the states specify limits as to the amount of indebtedness a corporation may incur, or as to the amount of stocks and bonds of other corporations that it may purchase, and where such restrictions are imposed they apply only to particular kinds of business. However, if a restriction of this nature is imposed it may influence the incorporators to organize elsewhere.

Comparative Tax Rates The corporation taxes are more moderate in some states than in others. Some states for example do not exact an organization fee. In others no annual tax is imposed, or there may be only one kind of annual tax imposed in a given state, as against two, three, or four in other states. Further, though one or more kinds of annual taxes may be effective, the rates may be lower in one state than in another. One state may fix a maximum organization and/or annual tax, while in another there is no tax limit. The lower rate of tax, or the fact that a maximum figure is set, would afford an advantage to the corporation, especially to a large corporation. By way of illustration, one of the states which grades its annual license tax according to the amount of the paid-in capital stock, specifies a maximum annual license tax of \$1,000 to be paid by corporations whose paid-in capital stock exceeds \$6,000,000. In the jurisdiction referred to, corporations having a paid-in capital stock in excess of \$6,000,000 enjoy an exemption from tax on the excess.

Basis upon Which the Tax Is Computed. The fact that a state bases its annual franchise tax upon the capital, property, and assets of the corporation employed within the state usually operates to the advantage of the corporation. The reason is that states in which the franchise tax is so computed usually stipulate that the franchise tax shall be in lieu of the property taxes imposed by the municipalities or counties, which local taxes invariably are computed at a higher rate.

Fund from Which Dividends May Be Declared. Another factor to be considered in the choice of a state is the payment of dividends. Some states prohibit the payment of dividends out of any but earned surplus, while others permit their payment from a fund which combines surplus and earned surplus.

Annual Reports Required. The preparation of the type of annual tax reports usually required to be made is a laborious and complicated task and discloses minute details of the company's financial affairs. It is sometimes deemed an advantage to incorporate in a jurisdiction which prescribes a comparatively simple form.

Qualifying the Corporation in Other States.—Not infrequently corporations organized under the laws of one state desire to transact business in one or more other states. If a corporation operates in any state other than that in which it was organized, it is regarded in that state as a foreign corporation. The legislature of any state may, and usually does, require as a condition upon which foreign corporations may transact business therein, that they first obtain a license or certificate from the Secretary of State to do so, and that they designate either an agent residing in the state or some public officer of the state, upon whom process may be served by persons in the state who desire to institute legal proceedings against the corporation; also that the corporation maintain an office within the state. The statutes generally provide that the license to do business within the state shall be granted to foreign corporations upon their filing with the Secretary of State the certificate of incorporation granted to them in their native state. It is also within the legislative discretion of a state, subject to its constitution, to impose initial license fees and annual taxes as a condition upon which foreign corporations are authorized to transact business within the state; and such initial fees and annual taxes are customarily imposed.

The foregoing general statement of the steps that must be taken to form a corporation will give to those confronted with the task of creating a corporation, an intelligible outline of the matters their attorneys will want to discuss with them before drafting the legal documents that are to accompany their formal application to the state for the inception of the corporation.

STOCKHOLDERS: THEIR RIGHTS AND DUTIES¹

By A. A. BERLE, JR., *of the New York Bar; Associate Professor of Law, Columbia University*

What Is a Stockholder? The stockholder has changed his position in American financial life so radically that the old rules no longer apply. Originally he was supposed to be a kind of modified partner in a small enterprise,

¹ Among the significant books in this field are:

SIMMONS, E. H. H., "Modern Capitalism," New York, 1927.

DEWING, ARTHUR STONE, "Financial Policy of Corporations," The Ronald Press Company, 1929.

LINCOLN, E. E., "Applied Business Finance," McGraw-Hill Book Company, Inc., 1929.

SEARS, J. H., "The New Place of the Stockholder," Harper & Brothers, 1920.

See also, for a more radical view,

VEBLEN, THORSTEIN, "Absentee Ownership," The Viking Press, New York, 1923.

usually a business man of means, able to take care of himself, and to take active part in the counsels of his corporation. During the past generation this situation has almost completely reversed itself. There are about 5,000,000 persons in the United States who today own stock (the estimate of 15,000,000 stockholders sometimes made is entirely too high); and the number is steadily increasing.¹ An overwhelming majority of these are "little people," that is, members of the investing public who own small blocks of stock, who know little or nothing about the corporate activities; whose advice is not sought in running the corporation and probably would be worth little if it were given. Stock is bought by most people as an investment; but the stockholder does not consider himself a responsible party in the business of his corporation. He trusts implicitly to the corporate management; his function is merely to contribute the capital, or to buy the participation of some one who has already contributed such capital.

This system in the aggregate virtually amounts to a new form of property tenure.² Roughly 40 per cent of the industrial wealth of the country (meaning thereby the national wealth excluding that proportion which is invested in government owned property and agricultural property, and a further deduction for certain real estate values) is represented by corporate securities actively traded in on the stock exchanges. Substantially more than half of this percentage is represented by stocks. The market valuation of such stocks varies widely and is incapable of accurate estimate; a probable figure (as of January, 1931.) is about \$65,000,000,000. This valuation bears only an oblique relation to the actual value of the underlying corporate property. It is an appraisal of the value of the shares as shares.

Many persons are, as a matter of economics, stockholders without knowing it. Thus, a man who holds life insurance really has a stake in an investment list owned by the insurance company; this frequently includes very large amounts of stock. He does not figure in business or in law as a shareholder at all. Yet he is vitally affected by the management of the corporations whose stock his insurance company holds. To a less degree this is true of bank depositors, investment trust shareholders, and participants in all institutions which collect savings. In its aggregate, the form of property tenure known as stock holding has become the type method by which industrial property is held in the United States. In its aggregate, the form of property tenure known as stock holding has become the type method by which industrial property is held in the United States.

In the aggregate also, the number of publicly financed corporations tends to grow steadily smaller; or, more accurately, concentration of wealth in the hands of the large corporations is steadily increasing. For instance, if the present rate of trend continues, substantially all of the industrial wealth of the country will be held by perhaps a dozen corporations in another century; and at that time the overwhelming bulk of the savings of the country would be invested in corporate securities. At present roughly 50 per cent of the savings of the country funnels into corporate securities; in gross figures this

¹ Estimated by Gardiner C. Means.

² *American Economic Review*, p. 54 ff, March, 1930.

amounts to approximately half of the monthly savings of nearly \$700,000,000, after excluding so much of savings as are needed for purely refunding purposes.

This means that the property structure of the country is rapidly reorganizing itself from a situation in which the individual invests money in his own business and expects to manage it, to a situation in which an individual invests his savings in a corporate enterprise and almost entirely loses control over it. To put it differently, ownership and power over property are largely divorced.

Technically, a stockholder is one who has subscribed for a share of stock (that is, agreed to purchase it on original issue); or, who has purchased a share of stock and caused it to be transferred into his own name. The corporation is obliged to regard as stockholders only those whose names appear on its books either as subscribers or actual owners.

Financially, the shareholder is a contributor of capital; but he is also something more. He is the best possible source of new capital. Accordingly, financial management today aims to keep the stockholder in a frame of mind to contribute additional capital. One of the cheapest and most satisfactory forms of financing is sale of stock through the issue of "rights" to subscribe to additional stock, which rights are distributed rateably among the stockholders' list. In the case of many older companies, new stock issues are obliged by law to be offered to stockholders rateably; but even where this is not the case, many corporations have found it good financial practice to raise additional capital in this way. Sometimes the corporation can thereby dispense with the services of an investment banker; the American Telephone & Telegraph Company, for example, has been able to raise new capital at the rate of roughly \$100,000,000 a year for a considerable period of time in just this manner. Corporations must go to the public for their capital; the aggregate of their stockholders' list is a little "public" which knows the corporation and which the corporation knows; and this financial goodwill is an instrument of great value.

As a matter of law, the stockholder has certain rights and duties hereinafter discussed. These may be summarized by saying that the stockholder is, in effect, the beneficiary of a very loose trust. Technically, law does not recognize him as such, though there is a growing weight of authority leaning even towards this technical result. Financially, he is in the position of having handed over savings to the corporation to manage for his benefit, and having surrendered almost absolute power to the corporate management, the implied understanding is that the management will handle this capital for his benefit and will pay him a proportion of the profits when it seems expedient to do so. As a matter of law the corporation and not the stockholder, has legal title to the corporate property. The stockholder, like the beneficiary of a trust, has only a claim against the persons who actually manage the capital; a claim based on the understanding that they will deal fairly and equitably with his property.

Classification of Stockholders. Unless something to the contrary is said in the certificate of incorporation, *all shares of stock are equal*¹ and must be

¹ MACHEN, "Modern Law of Corporations," Section 517, 1908, an old book, still the best in the field.

dealt with equally. If any difference is to be made, the corporate charter must state exactly what that difference is. In practice this means that unless there is to be only one class of common stock, the charter must "classify" the stock, setting out the respective rights, preferences, and disabilities of each class of stock. This privilege has been widely availed of; stock of almost every conceivable description can now be found in the markets. In general, however, certain distinct classifications appear.

Limited Preferred Stock. This is stock issued under an agreement that it will, in the event of dissolution of the corporation receive a stated amount, and no more, payable before the junior securities receive anything; also, usually, that it will receive dividends up to a certain amount; and no more, also payable in preference to dividends on junior securities. There may, of course, be preferred stock of various priorities; first preferred, second preferred, third preferred, and so forth. In this case the preferred stocks take rank according to their various priorities. The distinguishing characteristic of this kind of security is its limitation in all respects; they imply a sacrifice of possible large participations for a supposed security of principal and income.

Modern financial practice requires that limited preferred stocks should be redeemable, this is, that the company shall be able to retire preferred stock either in whole or in part when it chooses. This permits retirement of preferred stock when interest rates are low and the substitution of a security bearing a lower yield. Managements which have not observed this rule frequently find themselves in the position of having to bear the burden of a 7 or 8 per cent preferred dividend rate at a time when it would be profitable to pay out the preferred stock and substitute a 5 or 6 per cent issue.

Participating Preferred Stock. This is stock preferred over junior issues, usually both in distribution of assets and in dividends up to a certain point; but carrying the right to a further participation in income or in assets on dissolution according to some scheme worked out in the charter. Thus, a participating preferred stock may be entitled, on liquidation, to receive say \$50, in priority to junior issues; and to have a cumulative dividend of \$3 per share payable in priority to any junior dividends; but after it has received such cumulative preferred dividend, it then receives an additional dividend per share equal to any dividend declared on the common stock. The variations in this type of stock are unlimited. They are typically used in the baking companies (Continental Baking, General Baking, etc.) and are widely known elsewhere. They are sometimes called "class A" rather than "preferred." In practice, thus far, participating preferred stocks have not worked out well; the security of the preference is frequently illusory; and their extra participation is apt never to be realized. They were popular in 1927, 1928, and 1929.¹

Non-cumulative Preferred Stock. This is preferred stock, usually receiving a fixed amount on dissolution of the company, in priority to junior issues; but with a dividend payable in any year only if earned and declared by the board

¹ Discussed in BERLE, "Studies in the Law of Corporation Finance," Callaghan & Co., Chicago, 1928.

of directors. There is a controversy as to the dividends on this class of stock, the New Jersey courts holding that when such dividends have been earned they must be declared or, if not declared, they will pile up and must be declared later; though such dividends need not be declared or paid unless earned. The Federal courts apparently hold that if the board of directors fails to declare the dividend, whether or not it has been earned, a non-cumulative shareholder simply loses his dividend for the year in which the omission is made; though the question has not been squarely decided whether surplus so piled up may ever be paid out to junior shares. Under the latter theory non-cumulative preferred stocks are far less desirable than common stocks, since by failing to declare dividends although earned, for a period of time surplus can be built up, and subsequently this surplus can be declared out as dividends to the common shares, after declaring merely one full year's dividends to the non-cumulative preferred. On this theory the directors have an apparently absolute right to make the non-cumulative preferred really junior earnings to the common stock.¹

This stock must be distinguished from the usual cumulative-dividend preferred shares, whose dividend, if not declared in any year (whether or not earned), piles up. Before any dividends can be paid on junior issues, all cumulated arrears of dividends must be declared and paid.

Not infrequently, on all classes of preferred stocks, there are provisions giving the preferred stockholders the right to elect a majority of the directors if default has been made in dividends and is continued for a stated period.

Common Stock. The common stock is the standard form of equity security, that is, it is the typical junior stock, entitled to all of the earnings and all of the assets of the corporation after providing for prior dividend charges and preferences. The rapid increase in value of standard common stocks led a number of analysts, notably Edgar Lawrence Smith, in 1923 and 1924 to suggest that the stocks were a better investment medium even than bonds, since the appreciation in market value and the increase in dividends more than made up for the risk of fluctuation in market values and the danger that the stock might be wiped out through failure of the corporation.² This analysis, which is as true in 1931 as it was in 1923, has been somewhat discredited by the collapse of 1929-1930; unnecessarily, it would seem, since even at the low levels of 1930 most standard common stocks were selling far in excess of their prices in 1921. But there is involved in the analysis an assumption that the investor shall not buy in the top third of the business cycle, unless he is prepared to hold his investment not less than fifteen years. Most investors cannot predict their necessities so long a time in advance; this is peculiarly true of the small investor.

Common stocks commonly are entitled to vote, and usually this class of stock controls the corporation.

"Split" Common Stocks. The modern corporate structure has developed a division of common stocks into classes (class A common and class B), though

¹ BERLE, "Studies in the Law of Corporation Finance," (cited above).

² SMITH, EDGAR LAWRENCE, "Common Stocks as Long Term Investments," The Macmillan Company, 1924.

BADGER, R. E., "Investment Principles and Practices," Chap. 11, New York, 1930.

such practice is far less popular than it was up to November, 1929. This involves a division of rights between two classes of common stock, each of which participates, but one of which enjoys different or greater rights than the other. Thus the Dodge Motor Company, prior to its absorption by Chrysler, split its common stock into class A and class B, class A having exactly the same rights as class B except that it could not vote. Some of the utility companies have worked out split stocks, one class of common stock receiving two-thirds of the income as a class and the other receiving one-third of the income as a class. By manipulating the number of shares outstanding in each class, the directors thereby obtain a very wide power in routing the ultimate destination of the dividends which the company will pay. Thus, in the utility example given above, by issuing many shares of class A common entitled to two-thirds of the income, and limiting the class B to a very few shares outstanding, the participation of the class A shares may be very much diluted. This is even more true where the division is not between classes as such, but is dependent on the number of shares in each class. In that event, by multiplying shares in one class and not in another, the entire appropriation of income received by any group in the corporation may be varied.¹

The device was used widely in 1925 to 1926 to segregate voting rights to a very small class of common stock, thereby enabling the management to maintain continuous control. The New York Stock Exchange, however, ruled that it would not list common stocks without a voting right; the New York Curb with some exceptions followed suit; and the device became unpopular.²

Stock Purchase Warrants. Technically, these are not stocks at all. They are options issued to outsiders granting them the right to purchase authorized but unissued stock of the corporation at a price stated in the warrant. They may run for any period of time; the popular type at present runs for many years or even perpetually. The value of such warrants cannot be ascertained; and no accurate method of their appraisal has been worked out. It seems to be conceded that the values accorded to such warrants by the markets up to 1930, were unduly high. Until they have survived a full business cycle there will not be adequate data on which to base a judgment. They cripple the company in financing, since it becomes difficult to reduce the capital stock; the price of the stock when it is above the warrant price tends to be depressed; an unstable market situation may always be created by the exercise of warrants and sale of stock; and the value of the warrants and the time of issue can be fixed only arbitrarily without reference to their real significance and to the corporation and its shareholders when they are finally exercised. This is peculiarly true where a corporation has issued several times as many warrants as it has shares of stock outstanding (e.g., American & Foreign Power Co.). One theory is that perpetual warrants will never be exercised but are mere gambling counters. Use is frequently made of such warrants to com-

¹ See for an interesting example the capital set-up of Associated Gas & Electric Company. The participation features are given in Moody's *Manual of Utilities*.

² This was due to an attack on the device by W. Z. Ripley of Harvard University subsequently embodied in his book, "Main Street and Wall Street," Little, Brown, and Company, 1927.

pensate promoters and bankers (for instance, Pennroad Corporation, Niagara Hudson Company, etc.); but they are sometimes sold for cash to provide additional capital. They represent equity securities having the greatest possible risk; and, in theory at least, the greatest possible appreciation. Their legal status is not defined; the question has never been raised in the courts as to whether a corporation can use its surplus funds to buy outstanding warrants.

The Stockholders' Position in the Corporation. Originally stockholders were the dominant group in a corporation, since they elected the board of directors, generally every year, and had an active influence on the management. With the advent of classified stock, this position was weakened; preferred stocks, at least as long as they were secure, had little interest in the situation, more significantly the common stocks had an interest adverse to the preferred. Particularly where the common stock represented little or no investment, management representing the common stock would take long risks in the hope of large profits; preferred shareholders, on the other hand, would seek conservative management and security of dividend. The device of non-voting common stock divorced even the common shareholder from the management; and quite aside from the device, this result has in practice been achieved in any case wherever the common stock is widely dispersed. In such case the preferred shareholders form one group more nearly analogous to bondholders; the common shareholders another group; and the "management," including the titular officers, and directors of the corporation, and an individual or group having perhaps a minority block of stock but a position of influence known as "control," together formed a third group. The interests of any of these groups may be adverse; not infrequently the management may have interests adverse to the entire group of stockholders, though this is, of course, an unhealthy situation which well managed corporations seek to avoid.

The modern corporate charter will contain as complete a grant of absolute power to the board of directors as is permitted by the statute of the State of incorporation. In the so-called "liberal" states—notably Delaware—these powers are so broad as to permit activities which would virtually amount to confiscation of the stockholders' property.¹ It does not follow, however, that these powers can be safely used, even though the corporate papers and the statute appear to grant them. In the first place, it is not good policy to set up a feeling that the management is arbitrary in dealing with its shareholders; this makes further financing of the stockholders' list difficult, and it leads stockholders to distrust their management and to seek some organized method of upsetting the control. Second, despite the absoluteness of the power, courts of equity will usually enjoin the use of the power where the thing done is unconscionable. For this reason stockholders have a passive position with which a management must always reckon; no less so because the management

¹ The writer, having found himself unable to agree with the Committee to Draft the Delaware Corporation Law in 1929, filed in substance a minority report indicating the dangerous possibilities of the Delaware law; see "Investors and the Revised Delaware Corporation Act," *Columbia Law Review*, May, 1929.

will not directly know of the sentiment of the shareholders until it breaks out in some kind of direct attack.

Further, certain kinds of activities must be approved by vote of the shareholders. Principal among these are the sale of the assets of the corporation as a whole (this usually must be approved by a majority or in some cases a two-thirds vote); in certain states a mortgage of the corporate property must be so approved; amendment of the corporate charter changing the rights of shareholders, or increasing or decreasing the authorized stock must always be consented to. Consequently, whenever major changes are under way the management is always faced with the necessity of obtaining a sufficient number of proxies from shareholders to permit the action desired; and where there is distrust in the management these proxies are difficult to obtain. The natural inertia of shareholders in giving proxies or in voting at all is a difficulty in any event; where to this is added a fear that the management is adversely interested or is arbitrary, the liberty of action of the management may be seriously crippled.

The precise position of the shareholder in economics is, at the moment, a matter of debate. Certain economists insist that a shareholder is only a supplier of capital. He ought not, therefore, to expect any more than a return equal to the interest on his money, varied up or down according to the risk he assumes. Legally, on the other hand, the stockholder is the owner of the enterprise and all accretions of value belong to him. The justification for the economic view is that the shareholder of today, unlike the owner of yesterday, does not add to his capital the quality of management and labor; he, therefore, should not expect the entire accretion to his property. The argument in favor of the legal position is that if the accretions by way of profits do not belong to the shareholder, and the management attempts to absorb them, there is a violation of the old principle of private property; and possibly also the danger that the management will successfully attempt to loot the corporate properties, leading to a wholly unhealthy business situation. In practice, managements do absorb a portion of the corporate profits at the expense of their shareholders, largely through devices such as side operations; issues to themselves and their friends of low priced securities; market activities in stocks of their companies and the like; but these activities seem not to be very great in proportion to the whole corporate assets. Since only a few of the companies (Bethlehem Steel, Standard Oil of New Jersey, etc.) have adopted the system of frankly paying to the management a share of the profits of the enterprise, American business is fairly open to the charge that no sufficient means exists by which a corporate management can be adequately paid for the value of its services. Obviously, a healthier situation will exist when the European system is adopted by which a percentage of net profits is set aside for and turned over to the management. Such arrangements when made must be disclosed and openly known, to avoid criticism. Meantime, the adverse position of the management (which naturally seeks compensation), as against the stockholder (who supposes he is getting the entire profit of the business) must necessarily continue. It should not be driven to seek pay from market manipulation or side transactions. This is one of the outstanding problems in corporate management today.

Stockholders' Rights.¹ The foregoing principles suggest the basis for the various rights which a stockholder at least nominally has. Such rights, while they exist in law, are by no means necessarily available for all shareholders, especially small ones, since the expense of enforcing most of them is prohibitive. They can, in practice, be enforced only where there is rebellion against the management, a stockholders' committee is formed, and a war chest provided. The position of the stockholder is practically far weaker than his technical legal rights would indicate.

Legally a stockholder is entitled:

To subscribe to a ratable share of any new stock issued by the corporation. This is the so-called "preemptive right" and is the basis for the "rights to subscribe" issued by the old line companies such as the American Telephone & Telegraph Company. The underlying theory is that a stockholder has a right to maintain his proportionate voting control and also his relative participation in the assets and earnings of the company. Accordingly, the law requires that on the issue of new stock, or of options to buy new stock on securities convertible into stock, the management must offer every shareholder the right to subscribe to his proportion of the new offering. Certain states require this only where the charter is amended and the authorized but unissued capital stock is increased. The right works out well enough where only one class of stock is outstanding. But where the capital structure is complicated, questions of great difficulty arise. In general, a limited preferred stock is not entitled to subscribe to an additional issue of shares of common stock. In general also, common stock is not entitled (and does not greatly desire) to subscribe to additional issues of preferred stock. The law is in hopeless confusion in dealing with split common stocks and participating preferred stocks.²

For this reason and others, many corporate charters contain clauses by which the stockholder "waives" in advance his so-called preemptive right.

To have any new or "treasury" stock at a price which will protect his interest. On the issue of new stock, the management is obliged to exact a fair contribution from the incoming shareholder. Where the stock has par value, it is required to charge not less than par for the stock, save in exceptional circumstances such as where the corporation is threatened with insolvency and can obtain the money in no other way. Even here it is not a safe procedure. The price must be paid in cash or property of a form approved by the statute under which the corporation is organized. Future services cannot be used to pay for stock; and where existing property or past services are used, the directors must pass a resolution evaluating the property; such valuation must be made in good faith, else there is a danger that the stock will be held to have been under-paid.

¹ It is attempted here to summarize generally rather than to enter into an extreme and technical analysis of shareholders' rights. The legal materials are collected in Berle, "Cases and Materials in the Law of Corporation Finance," West Publishing Co., St. Paul, 1930.

² See A. H. FREY, "Shareholders' Preemptive Rights," vol. 38, p. 563, *Yale Law Journal*, 1929.

Where the stock is without par value (so-called "no-par" stock), there is no minimum requirement of payment. The directors must there determine what price adequately protects the old shareholders—they cannot, of course, be required to fix a higher price than the stock will sell for—and they must act fairly in the transaction. *Prima facie*, "no-par" stock cannot be sold to two groups at the same time at different prices; and wherever no-par stock is so sold, it must appear that the group paying the lower price is adding some element of strength to the corporation justifying their being allowed to come in at a price lower than that charged other subscribers. This is sometimes known in law as the "rule of equitable contribution." Likewise, no-par shares cannot be sold at a price so low that the incoming shareholder virtually attracts to himself a portion of the assets formerly belonging to the old shareholders.

To have dividends declared to him when the corporation does not need the accumulated surplus. While the law is extremely flexible as to when dividends must be paid, unreasonable accumulation of earnings, or failure to pay dividends for purely arbitrary reasons (as, to "freeze out" shareholders, or permit directors to buy at a low price) is not allowed. A stockholder can sue to compel payment. In practice this right does not amount to very much, since the judgment of the directors as to whether the corporation needs the money for additional expansion is almost absolute, and courts are not in a position to revise the judgment of the managers in this respect.

To have the management run the corporation impartially for the benefit of the shareholders. This also in practice is not easy to enforce. Nevertheless, a management is not legally allowed to run the business of the corporation primarily to forward side interests, or to favor one group in the corporation as against another. This has become an issue of great importance: as, where a banking group uses an investment trust either to take up the sale of the issues it finds difficult to sell, or to purchase control of another company so that the banking group may acquire power over that company; etc. A notable instance of this was the handling of the Denver and Rio Grande Railroad, prior to its reorganization and its use of funds to acquire and dominate other railroads. The Interstate Commerce Commission raked over this situation, vigorously criticizing the Gould management on this score. Similar criticisms were leveled, after its failure in 1930, against the Bank of United States.

To non-discrimination between shareholders. It is a fundamental rule of corporation law that all shareholders in the same class must be treated alike. Sometimes this raises problems: the British General Electric endeavoured to issue rights to subscribe, but limited them to British shareholders. The American shareholders vigorously contested this and the management found it necessary to recede from their position. So wherever stock dividends are issued, they must be of the same kind of stock to all shareholders; wherever stock is split up or changed in form, the change must affect all holders alike.

To retain unimpaired the contract position of his share, except where emergency requires its change. This also is a difficult right to assert. Not infrequently after a corporate structure has been set up, it is desired to change the rights

of certain shareholders, as, to put a prior preferred stock ahead of a first preferred stock; or to change the preferences of the preferred stock; or the like. *Prima facie*, this cannot be done where the change is material (in any event it requires the assent of a majority of the shares affected); even a minority stockholder may object. If, however, the management is proceeding under an appropriate power to amend the charter, and is able to make a showing that the situation of the corporation requires the change; and it appears that no class of stock is being unduly sacrificed to another class of stock, then the change will be permitted. In different states the right is differently applied; the stockholder's position is rigidly maintained in New Jersey, and only laxly maintained in Delaware.

To have his share of stock appraised and to be paid out in cash in the event of a merger or sale of the assets. Where the corporation merges with another, or where it sells its entire assets, a number of states provide that the shareholder who has objected may demand that his shares be appraised and that he be paid out in cash. This is designed to prevent the management, acting under a majority vote, from forcing the shareholder to take stock in a different or merged enterprise. The right is a new one and not thoroughly tested; appraisal proceedings have proved more difficult for shareholders than was originally supposed. The right to appraisal which is derived from statute and does not exist in all states, does not prevent the shareholder from objecting to the merger or sale and securing an injunction against it; it is a "cumulative" right, that is, a right which he has in addition to his legal right to prevent the merger if it is unconscionable, unfair, or confiscatory.

In case of merger or sale, to have the equity interest represented by his share protected. In the event of merger or sale of assets, the result commonly is a conversion of the shares of the merging company into shares of a new corporation or of the stronger of the combining concerns. In such case a shareholder is entitled to be offered securities in the new corporation representing equities in the new concern of approximately equal value to the equities held by him in the old concern. If he be a preferred stockholder he is entitled to a preferred position, and to have the amount of his preference in assets or dividends suitably recognized. If he be a common shareholder, he is entitled to the fair value of his equity in equity securities of the new corporation. This results in a battle of experts as to values; and one factor in this is the fairness with which information of values is given out to the shareholder to induce him to vote for or against the proposed merger or sale of assets.

To have the management act in the corporate interest only. Thus a management cannot, as individuals, purchase property which the corporation needs and resell it to the corporation at a profit. There is always the danger of becoming personally liable for any profit received. Again, the management cannot normally trade directly or indirectly with the corporation, though in many states if the result of the bargain is fair, the transaction will not be upset. Some states go to the length of upsetting any transaction where the management of a member of it has traded with its own corporation.

The foregoing summarizes the more important stockholders' rights. In individual application a management may run into singular and perplexing situations. Thus if the management is about to issue stock purchase war-

rants, the shareholder has a right that these shall be so handled as to yield the greatest amount of capital to the corporation. If the management is about to sell securities, the stockholder has a right that the management shall make the best arrangement reasonably possible with underwriters, etc. In like manner the stockholder is considered entitled to receive information from the management from time to time though this right is hazy. Corporations having their shares listed on the New York Stock Exchange are commonly obliged by the Exchange to publish periodic statements, in the form of balance sheets and income accounts, both for the guidance of the market and of their shareholders.

Certain specific rights are accorded to the shareholders by statute. Notable among these are:

The right to secure a stockholders' list. Any shareholder can normally demand that the corporation turn over to him its list, and penalties are provided where the list is refused. In New York there is an exception. Where the stockholder has used this procedure to obtain a list and then has sold the list for advertising or other purposes, his request may be denied.

The right to inspection of the books. On application to a court the stockholder can, on the showing of a legitimate interest or reason therefor, have an inspection of the account books of the corporation, and may put auditors on the books to accomplish such inspection.

The right to disclosure where the management is itself buying or selling stock. This is not true in New York or in a number of other states; but there is a substantial minority of states in which a director or officer of a corporation may not buy or sell stock from or to a shareholder without disclosing any unpublished facts which he may know affecting the value of the stock.

The right not to have dividends paid except out of surplus. States do not normally permit a corporation to pay dividends except where its assets are greater than all its liabilities, including as a liability the amount of capital set up behind its capital stock. This right has, however, been partly defeated by legal devices permitting creation of "capital" or "paid in" surplus carved out of the original consideration for the shares. Likewise, a corporation cannot purchase its own stock except out of surplus funds.

The right not to have the corporation speculate in its own stock. While the corporation is legally empowered to buy and sell its own stock in the market, it is probably not legal for a corporation to gamble or speculate in its own stock. Under appropriate disclosure, a limited amount of operation in support of the market may sometimes be permitted. By statute also in New York it is a penal offence for a director to sell stock of his corporation "short." This statute is so difficult to enforce, however, that it is, in practice, a dead letter.

All of the foregoing are merely more or less technical applications of the general rule that a corporation and its management have certain powers, which powers must be used in trust for the benefit of the whole. Where the fundamental right of a stockholder is violated, on appropriate application to a court he can obtain relief. A management can defend the action usually only by showing that the action taken was necessary to prevent misfortune befalling the corporation and its shareholders.

As between each other, stockholders have substantially no rights. There is one exception to this. Where one stockholder holds a controlling interest in the corporation and so dominates the management that he is virtually identified with it, stockholders are entitled to treat him rather as a member of the management than as a shareholder. But as between themselves shareholders are not bound to consider the interests of others; they may vote their stock for purely private reasons; they may trade against each other in the market; and the law recognizes no relation between them.

Stockholders' Duties. The obligations of a stockholder are hazy in the extreme, with one exception. Every shareholder must, on original issue of stock, subscribe and pay an equitable contribution, not less than par, if the stock have par value. Failure to live up to this obligation in general permits a creditor of the corporation to sue the shareholder in the event that the company becomes insolvent and requires him to pay up the balance of the par value (if the shares have par value). If the shares have no par value, probably the creditor has no such right; but another shareholder may sue either to impose a liability on the subscriber who has bought at a low price or to have the number of his shares cut down, or for other equitable relief.

Beyond that, shareholders are not considered as having any relation to each other. They are in no sense considered partners. While a majority of shareholders may not use their power to vote changes in the certificate of incorporation amounting to a confiscation of the property of the minority, this is regarded as an act of the corporation and not of the shareholders individually. Nor is a shareholder under any duty to disclose his knowledge when he trades in the stock of the corporation. He may enter a business which competes with the corporation. In this respect the old law that stockholders were in some sense partners has completely disappeared. A shareholder is not obliged to attend annual meetings; he does not have to vote; he may remain completely inactive throughout. If, however, he desires to object to any action of the corporation he must do so within a reasonable time after he knows or ought to know of it; and if he accepts any benefit from the action of the corporation he is estopped from subsequently attacking such action. Thus, if a stock dividend is declared and he accepts the dividend, he cannot subsequently attack the legality of that dividend because he has acquiesced in it.

The Unsolved Position of the Stockholder. The foregoing résumé indicates that the development of the law relative to shareholders has been unsatisfactory in the extreme. On the one hand in an attempt to protect him the law has worked out a series of more or less arbitrary rules which frequently prevent the management from acting with the necessary speed, or from taking perfectly legitimate corporate action. On the other hand, the economic disparity between the management and the shareholder has placed the shareholder in an extremely weak position. Finally, the entire mechanism of the corporation is at variance with the whole theory which the law has built up.

In earlier times investments were conditioned by the need of the investor; and stipulation was made to repay them at the time that the investor thought he would need his funds. This is no longer true today, largely because modern

business does not permit the withdrawal of capital at will. You cannot liquidate a plant; capital once locked up in it remains so for an indefinite period. Nor are corporations dissolved with any frequency; any theory that the investor's interest in assets on dissolution amounts to very much has been abandoned by bankers and economists alike. What the stockholder has got is a "*rente perpetuel*" or permanent right to participate in profits; and almost the only way he can get his money back is by a sale in the open market. As industrial property comes more and more under the corporate system, this throws the entire appraisal of industrial property into the speculative operations of the exchanges.

We have thus the paradoxical situation that the most serious business enterprises, and a great part of our national wealth, is valued from day to day not as a result of any intrinsic merit, nor even on the basis of the business situation, but often on the results of speculative operations, undue optimism or undue pessimism as the case may be. The shareholder claims ownership, but he assumes absolutely no responsibility; the management assumes responsibility but has not any well defined right to a share in the profits.

Control, Investment and Private Property. Concentration of power is bringing industrial property under a system which rivals in intensity the feudal system of the Middle Ages, or perhaps, the Communist system in Russia. At present, some 200 large corporations with less than 2,000 directors, actively control perhaps 30 per cent of the industrial wealth of the country; and they do so under a set of statutory and charter powers which permit them to sacrifice individual rights of shareholders to economic exigencies. It may fairly be said that private property under the corporate system has ceased to exist, at least in the sense in which it was known in the agricultural times of the last century. In its place has been substituted a series of expectations that the extremely limited group of corporate managers will deal fairly with the participants' tremendous blocks of property and the income streams which they are able to dominate.

Methods of domination have grown up which require relatively little investment or risk by the management themselves. In part this is due to the fact that industrial enterprises are of such size that no single individual or even group of individuals can make an investment large enough seriously to affect the situation. In part it is due to the development of devices by which a small block of voting stock controls a large corporation, which, in turn, uses its assets to buy the working control of other corporations, which, in turn, control still other corporations, thereby making possible a pyramid structure like that by which the Van Sweringens control a transcontinental railway system; the Eaton interests control a group of steel companies, and by which, at one time, Goldman Sachs & Company controlled a tremendous chain of more or less affiliated enterprises. It must not be implied that this power is necessarily abused: in the majority of instances the power is probably regarded as a public trust and dealt with accordingly. But it is used without reference to the shareholder, a frequent motive being often individual desire for power. Of all this the legal outline of the shareholders' position conveys very little.

It is obvious that we have by no means reached the end of this tendency. Concentration in the depression of 1929 to 1930 continued even more vigor-

ously than during the upswing from 1925 to 1929. As the number of shareholders multiplies their individual weakness grows greater; when their aggregate investment tends to grow continuously larger.

Liquidity of Investment and Market Operations. The shareholder needs protection in liquidity of investment. He should be entitled (though no method has been worked out or is yet in sight) to a market situation in which he can realize a reasonably fair value on his investment when it becomes necessary for him to withdraw his funds. To supply this liquidity, corporations list their shares on the stock exchanges; but the fate of exchange values is, as has been noted, largely in the hands of blind forces. That shares will fluctuate with the business cycle and with business conditions generally must always be true. It does not follow, however, that these inevitable fluctuations should be accentuated to an unbelievable degree of violence through irresponsible outside operations. It should be unthinkable that the corporation itself and the management which theoretically represents the shareholders, should at any time have an interest in the market adverse to the very shareholders who have supplied the capital. Yet all of these circumstances have been present at various times in the open market situation.

The Management as Professional Trustees. Leaving legal theory aside, shareholders' property under the corporate system is subject to a degree of control unheard of in previous modern history; the corporate management through its intrinsic powers, and through the power which it has to manipulate information and to enter the market, is in a position to deprive the shareholder of his property in a manner not accorded even to absolute governments for many centuries. It is a tribute to American business that this power has not been exercised to the detriment of the shareholder in the vast majority of instances. But the steady increase of the power indicates that a generation hence the problem will become of supreme importance. Put concisely, power over property has concentrated and will further concentrate in so few hands that there will be substantially an economic oligarchy, rivaling political government in actual power. This may very well be the best possible organization of industry; certainly, no better method of managing industrial enterprises has yet appeared. It does mean, however, that management must become increasingly professionalized; that its rights as against stockholders must be more clearly defined, particularly with reference to the share it is entitled to receive out of profits, and as to the degree to which personal considerations may be allowed to affect its actions.

Some commentators, notably Prof. W. Z. Ripley of Harvard, urge that the shareholders should be given greater voting rights. But there seems no reason to believe that a shareholder either can or will use these intelligently; the fact being that he rarely uses them at all, except in time of crisis and then only at the dictation of a group seeking to oust or control the existing corporate management.

The real development in this field would seem to lie in defining standards of accountability of management to shareholders. These turn, as nearly as can be estimated, on the following considerations:

1. *An increasingly professionalized attitude of business men.* As the managements of corporations become increasingly professional, acting under stand-

ards of ethics analogous to doctors, lawyers, or other professional men, they more nearly meet the role marked out for them.

2. *Increasing fullness and accuracy in recording and publishing facts as to the corporate operations.* In substance this comes down to accurate and ethical accounting. A difficulty arises here because accountants themselves are not agreed on standard methods of accounting, nor, (save in general lines) as to the ethics of accountancy. In general, the accountant is relied on to state the facts as to corporate values and corporate activities. The public is dependent on him both for information as to what the corporation has done and for the raw material from which an appraisal of corporate shares must be made. Thus the accountant has become one of the dominating forces in the stock market. If his accounting be legitimate, he is a healthy force. But until standardized methods of accounting are worked out and agreed on, and accountants insist on uniformity of accounting, there is a long road to travel before this type of accountability can reach its greatest effectiveness. The New York Stock Exchange is now pushing for standardized, clarified accounting systems.

3. *The shareholder must be educated so as to know the problems which the management must meet, the standards to which they are obliged to conform, and the meaning of the corporate steps taken.* In this respect managements have not begun to do what is fairly open to them. In part this is due to the desire of some managements to conceal the real reasons for the steps they take; but for the most part corporate managements simply have not gone to the trouble of educating their stockholders. Yet it would seem that an intelligent management, regarding its stockholders' list as a prime source of capital, and possibly as a market for its products, should indicate from time to time the precise significance of the major business steps taken; the reasons for accomplishing them by the particular means adopted; and the significance which the required legal steps really have. On this theory the stockholders' goodwill can be built up; the management is legally safer because it has disclosed the entire situation and therefore forecloses objection to the action taken; and, in the long run, has given stockholders a fair picture of its designs. Careful lawyers encourage this; and students of the situation insist on it as an ultimate necessity, though their views have only begun to penetrate the business world so far.

4. *Appropriate arrangements for compensation of management must be worked out and must be generally known to all interested parties.* Managements ought not to be required to resort to side operations, stock market campaigns, dilution of stock or the like, to receive substantial compensation for their services. Nor should shareholders be put in the position of having their interests in jeopardy from such devices. A defined arrangement can be made, so that profits are shared, a management receiving reward for successful labors. Arrangements whereby the management has to assume a position adverse to the shareholders to receive compensation are both legally and financially unsound. Open and well-understood agreements on the subject are possible which are both sound and safe.

Responsibility goes with power under any system, either of law or government. The broader the understanding of the subjects of the power, the safer

are those who exercise it. Much of the distrust of corporate managements arises from involved legal procedure (which no one bothers to explain) and from failure to recognize a duty to account comparable to the duty of a trustee. This is a business rather than a legal question, since courts cannot undertake to run businesses; legislative action is as likely to be harmful as helpful; and modern enterprises cannot be expected to abide by an arbitrary set of rules. The New York Stock Exchange has taken the initiative in requiring information and setting up certain rules of policy to safeguard shareholders. But in the last analysis this responsibility rests, not on the Exchanges but on corporations themselves, acting through their managements and their control. The alternative is government control,—a dangerous expedient at best, save in specialized forms of activity such as banking, and public utilities.

In summary, the position of a shareholder is that of a holder of a set of legal rights, many of which he cannot enforce, based on the general theory that he is entitled to have the corporate enterprise run for him as his interest may appear. In practice, legal rights cannot be enforced and the shareholder must rely on the good faith of the management as to the fate of his investment. As to withdrawal of his investment he must rely on the market, which at present is apt to be largely arbitrary in its appraisals. Meanwhile, the stockholder is coming to represent the vested property holder of the country; and he is coming to regard his management more in the nature of a government than in the nature of a business representative. Individually he is powerless; collectively, he can only act by a process almost as unintelligent as that of revolution, that is, his collective action is no better than the leadership which happens to supply itself in time of crisis. The management, on the other hand, knows very well that it has duties, not merely to the shareholder, but also to the public which it serves and to the community as a whole. It is obliged to balance these interests, and often to deal with business situations often of extreme difficulty, even though the result may be unhappy for its own shareholders. This responsibility it cannot avoid. The next decade will probably see a steady clarification of this situation through the increasing professionalism of the management, the increasing exactness in methods of recording and giving publicity to corporate activity, and in the increasing education of shareholders.

CHAPTER IV

BOARDS OF DIRECTORS, BOARD COMMITTEES, AND OFFICERS

FUNCTIONS OF BOARDS OF DIRECTORS, BOARD COMMITTEES, AND OFFICERS

BY JAMES O. MCKINSEY, *Senior Partner, James O. McKinsey and Company; Professor of Business Administration, University of Chicago*

Difficulties of the Subject. For several reasons this subject is a difficult one to discuss:

1. *There is little or no discussion of this subject in the literature of business management.* There is a considerable amount of discussion of the legal responsibility of boards of directors and officers of boards in the legal literature, but this does not discuss the responsibility which the board or its officers should assume in order to provide for efficient management.

2. *It is quite difficult to ascertain what authority and responsibility the boards and officers of boards of corporations exercise.* The only source of information available is the minutes of the meetings of the boards of directors and these do not give an adequate picture of the activities of the board. Many significant problems come before a typical board which are not recorded in the minutes. For example, the board of directors may discuss important problems with reference to executive personnel and with reference to the relationship of the company to competitors which they do not desire to have recorded in the minutes. There are many other questions of a similar nature which it is usually regarded inexpedient to have recorded in the minutes. There are also other questions which are not regarded of sufficient importance to be made a matter of record which are, nevertheless, significant in considering the activities of the board of directors and its committees. As a consequence even though we were able to examine the minutes of numerous corporations, we should still lack a complete picture of their activities.

3. *The activities of boards of directors and officers of boards in different companies vary so widely* because of the differences in the size of corporations and differences in their activities that it is hard to make generalizations.

4. *It is difficult to draw conclusions concerning the activities of different boards because we have no definite standards to use as a method of judging the efficiency of different boards.* We do not definitely know whether the practices of one board are better than those of another board although we may personally prefer the methods of one to those of another.

Conditions Determining Functions. The functions of boards of directors, vary from company to company. What a board of directors should do depends upon:

1. The nature of the activities of the business.
2. The size of the business.
3. Whether the board of directors is composed entirely of executives of the company or partly of executives and partly of members who are not employees of the company.
4. The financial condition of the business. If the business is prosperous the board of directors is very likely not to exercise as close supervision over its activities as if the company is in difficulties.
5. To some degree upon the financial structure of the corporation. If the stock of the corporation is held primarily by the executives of the company who are also the directors, the attitude of the board toward the management of the company may be somewhat different than if the stock is widely distributed and the board of directors is acting in more or less of a fiduciary capacity.

There are certain conditions which have tended to cause the board of directors to exercise more responsibility in the management of the business than they formerly did. There is a tendency for the managing group to be distinct from the ownership group. In the early development of corporations in the United States in most cases the executives were the principal owners of the business. During recent years stocks have been distributed more widely and in many cases the executives and even the directors of the group do not own the majority of the stock in the corporation. This has brought about the situation in which the board of directors acts in a fiduciary capacity. If they fully realize their responsibility, this naturally leads them to exercise closer supervision over the activities of the business than if they were not representing a large group who were not familiar with the activities of the business and who were not exercising any responsibility for the management of the business other than selecting the directors to represent them.

6. Management problems have increased both in number and complexity during recent years. As a result it is no longer wise to have decisions with reference to these problems made by chief executives alone or even by the chief executive and his major assistants. It is desirable that the executives have the benefit of the advice and judgment of a large group.

Functions of the Board of Directors. As a basis for discussion the functions of a board of directors may be summarized as follows:

1. It should be responsible for establishing the general objectives of the business.
2. It should establish the major policies of the business.
3. It should determine the organization structure of the business and select the major executives of this organization.
4. It should be responsible for "checking up" on the executives of the business to whom the responsibility for its administration has been delegated.

Each of these major responsibilities of the board can be subdivided to any extent desired and various classifications of its responsibilities can be made, but all of the activities of a typical board can be satisfactorily classified under one of these headings. A brief discussion of each of these functions of the board may serve to indicate its responsibility more clearly.

Relation of the Board to General Objectives. The board should determine the lines of activity in which the business is to engage. It should decide, for example, the number of lines of product it is to handle and whether it should manufacture or purchase the products it sells. It should decide whether it should enter the retail field in the distribution of its products or should distribute through jobbers or other means. It should determine the volume of its activities and the rapidity of growth which it should seek. It should decide with reference to its contact with other organizations both competitive and otherwise. It should decide whether it should produce and sell locally or nationally. In other words, it should determine what the general goals or objectives of the business should be.

Relation of the Board to Policies. After these general objectives have been determined, it should adopt policies which should establish the plan of action by which these objectives are to be attained. In a typical business the policies which must be adopted are numerous. The question immediately arises, therefore, as to what policies should be submitted to the board and what policies should be left to the judgment of the executives. It is obvious that the Board cannot pass on all the policies of the business. Any policies which may materially affect the prosperity of the business should be submitted to the board for its consideration. This statement is not a definite one and this plan leaves to the judgment of the executives to a considerable degree whether a policy is of sufficient importance to be brought to the attention of the board. This condition cannot be eliminated for after all we trust to a considerable degree the judgment of the executives of a business. If we eliminate the privilege of exercising this judgment, the executives cannot function efficiently.

One of the responsibilities of the board is to decide whether the executives exercise this judgment wisely. If the board of directors find by experience that the executives do not submit to it policies which it desires brought to its attention, it is then proper for it to give the executives instructions concerning their future actions. If the executives are not capable of carrying out such instructions wisely, then it is the privilege and responsibility of the board to secure other executives.

The wise executive will submit to the board for consideration all policies which he thinks are of significance to the prosperity of the company. In case of doubt as to whether the policy should be submitted, the wise executive will submit it to the board or a committee of the board. By following this plan, he protects himself. If the board approves the policy recommended by the executive and the results are not satisfactory, the board must share the responsibility for adopting the policy with the executive. We are all aware that in many cases it is impossible to secure so comprehensive information as we desire as a basis for making decisions. As long as this condition prevails, the executive should see that his board shares with him the responsibility of making important decisions.

Another important question is to what extent policies should be initiated by the board and to what extent they should be initiated by executives. This question cannot be answered arbitrarily. Primarily, responsibility for the initiation of policies rests upon executives. They are in daily contact with

the activities of the business and should be the first to see the need for changes in policy. However, if the board is composed of the proper kind of members, important questions of policy will often be raised by them. Members of the board should be encouraged to offer suggestions and information should be brought to their attention which will serve to stimulate their thinking concerning the policies of the business. The proper kind of board will often anticipate problems which would be overlooked by the executives.

The relationship between the executives and the board should be one of mutual cooperation in which the parties on each side are encouraged to give full play to their initiative. It is very important that an attitude be developed in an organization which will stimulate the offering of suggestions on the part of all members of the organization. Major executives should encourage their subordinates to offer suggestions and should give full credit to those who offer useful ones. Many times men who hold subordinate positions may have useful ideas concerning the management of the business which may not have occurred to the major executives or members of the board. We should therefore provide a means by which ideas and suggestions may flow freely from the bottom to the top of the organization and vice versa.

Relation of the Board to Organization Problems. After the general policies or plans of action of the business have been determined serious thought should be given to the type of organization to be used in executing these policies. The board should accept the responsibility of determining the type of organization to be employed by the company. In other words, it should determine to what extent the company should have a functional organization, territorial organization, commodity organization, etc. In most cases it will be necessary for the executives to offer suggestions to the board with reference to the type of organization to be employed. Where the executives fail to take the initiative in doing this, the board ought to take the lead in considering this problem. The board should have submitted to it at regular intervals a picture of what the organization is and what changes are contemplated in its development. It is accepted practice to submit to the board a picture of the financial condition of the business and more and more it is becoming customary to submit to it a budget showing the plans of the organization and the anticipated results of these plans. It is equally important that the board should have presented to it a picture of the organization and personnel of the business and the contemplated plans for its improvement.

After the organization of the company is established, the board should then select the major executives of the organization. They usually exercise this function by accepting or rejecting the recommendations of the chief executive. It is obvious that the board cannot pass upon all of the employees or even upon all of the executives of the business in the case of a large organization. The board should approve the selection of all the executives who report to the chief executive. The reason for this suggestion is that the selection of an executive should not be left entirely to the judgment of one individual and if the Board does not approve the selection of all executives who report to the chief executive, the selection of these executives will be left to the judgment of the chief executive. Therefore, the board should

approve the selection of such executives as the sales manager, the production manager, the treasurer, the comptroller, etc.

With reference to the executives who are subordinate to the major executives, the board may leave their selection to the chief executive and the immediate superior of the executive to be selected. For example, the assistant sales manager may be selected by the sales manager with the approval of the president. In this case, at least the judgment of two executives is required in the selection of an employee. In special cases in which the board may have reason to question the efficiency of a particular department, it may interest itself in the selection of executives below the rank of those mentioned but in general it is wise for the board to delegate as much authority and responsibility as possible with reference to these matters to the major executives so long as they have no reason to doubt their efficiency.

Responsibility of the Board for Checking Efficiency of Organization. If the board is to exercise proper control over executives to whom authority is delegated, it is necessary to have some means of checking their activities. The most customary way of doing this is by means of periodical reports submitted to the board. In many cases, however, these reports are only condensed financial statements and do not give the board sufficient information to enable it to judge the efficiency of the various executives. The board should have reports which will at least enable it to judge the efficiency of each of the executives whose selection it has approved. It is true, of course, that it is sometimes difficult to prepare statements which will correctly show the efficiency of some executives, but it is certainly possible to prepare much more comprehensive reports than those received by most boards. In addition to these financial statements, the board should receive at regular intervals budgets showing the program of each of the major executives as well as the program of the company as a whole. At the end of each accounting period it should receive statements showing a comparison between the budget for each period and the actual results. It is preferable that this budget comparison become a part of the regular financial reports so that it will not be necessary for the board to consider two sets of reports.

In addition to the information which the members of the board obtain from such reports it is desirable that they obtain some information by personal observation. Members of the board who are executives of the company will necessarily have a very considerable amount of information concerning what the executives of the company are doing and will be able to judge to some extent their efficiency. It is desirable that the members of the board who are not executives should also become acquainted with all of the important activities of the company by personal observation. To make this possible, it is necessary that opportunity be provided for the members of the board to inspect the activities of the business from time to time and to visit with the executives of the company who are not members of the board. Such a practice is not only beneficial to the members of the board but produces a desirable psychological effect on the members of the organization.

Composition of the Board. The functions which the board of directors should perform depend to some degree upon whether the board is composed entirely of executives in the business or whether some members of the board

are drawn from other lines of activity. There is considerable difference of opinion regarding this question. It is my opinion that the board should be composed partly of the executives of the company and partly of those of executive rank who are not employed by this particular company. In other words, it is quite desirable to have on the board of directors those who have been drawn from other lines of activity.

It is sometimes urged as an objection to this plan that it is difficult to secure executives from other lines of business who will give sufficient time and attention to the affairs of the companies on whose boards they serve to be able to give constructive advice and criticism. One has to admit that there are some who accept positions on boards of directors merely because of the honor attached to the position and who do not render worthwhile service to the company which they are supposed to serve. It is possible, however, to secure men to serve on boards of directors who will take a sincere interest in the affairs of the corporation. This plan is beneficial not only to the company on whose boards these men serve but also to the company by whom they are employed since it broadens their point of view. It should be valuable to have on the board men who have a wider experience than the executives can possibly have and who can consider the problems of the business from an outside and impartial point of view.

Functions of Committees of the Board. The second question we have for consideration is the functions of committees of boards of directors. The first question which naturally arises is why there should be such committees. The primary reason why we should have such committees is that boards of directors are taking their responsibilities more seriously and are taking a more active part in the management of the business. In order to do this, it is desirable that there should be committees to whom problems can be referred for careful consideration before the board attempts to decide with reference to those problems. If the board is to function in the manner suggested, it will be quite difficult for the board as a whole to give sufficient consideration to each problem brought before it to be able to arrive at a satisfactory solution. It promotes efficiency to refer many of these problems to committees which after careful consideration will make a report on them to the board.

The second reason for having committees is that many questions may arise during the intervals between board meetings which cannot wait for decision until the next meeting. It is possible to refer these to a committee which can act for the board during this intermission.

It is impossible to state arbitrarily the number of committees which any particular board of directors should appoint since the number depends upon the size of the business and the nature of its activities. In the typical corporation there should be at least one committee usually called the executive committee or finance committee which is authorized to act for the board with reference to problems of a general nature which need decision during the intervals between board meetings. In many corporations that is the only committee which is necessary. In some lines of activities there are other committees which are useful. For example, in a bank there may be the following committees:

1. The *finance committee*, which handles the problems already mentioned and in addition has jurisdiction over the making of loans. This committee is sometimes called the loan and discount committee.

2. The *advertising and new business committee*, which may control the expenditures for advertising and formulate plans for securing new business for the bank.

3. An *auditing committee*, which is responsible for supervising the records of the bank, inspecting the securities and employing professional auditors when this is deemed necessary.

In addition to the standing committees, special committees may be appointed from time to time to consider special problems which come before the board. Each of these committees should have a chairman and a secretary appointed by the presiding officer of the board. They should be required to keep minutes of their meetings and to make reports to the board at each meeting. It is not possible to state definitely who should be members of these committees. The chairman of a board should use his judgment in selecting those members of the board who are most competent to serve on each committee. Where there are sufficient committees to make it possible, some benefit is obtained from having all members of the board on some committee so that each member will feel that he has some definite responsibility to perform. These committees can be used as a means of stimulating the interest of the members of the board in the company. Of course, if too many committees are appointed and they are required to meet too frequently, they will fail to function efficiently and their operation will become burdensome.

The *kinds of questions which should be referred to such committees* fall into three general classes:

1. General questions which need to be considered during the interval between board meetings.

2. Problems which need to be given careful study before a solution is reached.

3. Special problems which arise from time to time and for which no precedent has been established and which, therefore, should be given special consideration.

In so far as is possible, the board should establish general policies which should control the actions of its committees. The committee's function is to apply the general policies to concrete cases. For example, in the case of a bank, the board of directors may adopt general policies regarding the type of loans to be made and the requirements for each kind of loan. It is necessary, however, to give consideration to the application of these policies to each concrete case and to make this application is the function of the loan and discount committee.

Officers of the Board. The officers of the board vary in number and responsibility according to the size of the company and the nature of its activities. The typical officers are chairman of the board, president, secretary, treasurer, and one or more vice presidents.

In some cases the president of the company serves as chairman of the board, while in other cases the board selects some member other than the president to

serve as chairman. There seems to be an increasing tendency to have a chairman of the board who is not the president of the company. In such a case, the question immediately arises concerning the relationship of the chairman of the board to the president.

Relationship of Chairman to President. The chairman of the board may be appointed under widely differing conditions. Sometimes a president of a company is made chairman of the board when he either desires to retire or the company wishes him to retire from active management of the business. In some cases the position is merely a nominal one and the chairman of the board exercises little or no jurisdiction outside of presiding at the meetings of the board of directors. In such cases, the president performs the function of chief executive and in some cases even presides over the activities of the board. In other cases, the chairman of the board may not be an active officer of the company and may even be employed in some other line of business. In such cases, he may exercise some general supervision over the activities of the business and is considered the superior officer to the president although the latter is usually given a considerable amount of freedom in the management of the business. In some cases such a chairman of the board is appointed when the business is refinanced by investment bankers. This places a representative of the bankers on the board to represent them in the management of the business. In other cases, the chairman of the board devotes his entire time to the management of the business and cooperates with the president in the administrative work.

It is in such cases that the relationship of the chairman of the board to the president becomes most important. The chairman of the board should devote his time primarily to questions of policy or major questions of organization and personnel, delegating to the president the responsibility of executing the policies adopted and directing the organization. This division of responsibility is justified in many organizations. Students of management recognized long ago in studying production problems that there is a distinct difference between planning and operating. This same distinction can be applied to the job of the chief executive and the chairman of the board may well concentrate on planning, leaving to the chief executive the problem of operating. In my opinion the chief executives in many organizations have imposed upon them responsibilities which are too great for one executive to perform most efficiently. This division of responsibility tends to lessen the task of the president and also provides an opportunity for the chairman of the board to give more time to studying the policies and major problems of the business than it is usually possible for the president to give if he has to assume all the administrative responsibilities of the business.

Duties of President. It is quite difficult to make generalizations with reference to the duties of the president. Assuming that there is not a chairman of the board and that the president is the chief executive of the business, his primary responsibilities may be as follows:

1. Giving careful consideration to the policies of the business.
2. Giving attention to the type of organization which the business should have and the personnel of this organization. This would include giving attention to the training of this organization.

3. Fixing responsibility on the members of the organization for executing the policies of the business.

4. Checking up on the organization to see that these responsibilities are properly executed.

If the chief executive is to perform these tasks properly it is necessary to delegate authority and responsibility to a considerable degree to his subordinates. Many presidents make their tasks more difficult by trying to perform too many detailed activities.

One reason why executives have not delegated authority and responsibility to subordinates to a greater degree is that in many cases they have not had satisfactory means of exercising control over those to whom authority has been granted. By developing effective statistical and accounting control and by developing budgetary control, it is possible for executives to control the operations of their subordinates. Therefore, they may safely delegate larger authority and responsibility. By so doing, they have sufficient time to concentrate on the major problems of the business. It is obvious that if the chief executive is to delegate authority, he must also define the responsibility of his subordinates. It is desirable that he present to all members of the organization a clear picture of what the organization is. The most effective method of doing this is by means of organization charts and manuals. Despite the limitations of such devices, their advantages far outnumber their disadvantages.

The Secretary. The duties of the secretary of a corporation are fairly well standardized. It is his responsibility to keep minutes of the meetings of the stockholders and the board of directors, to send the formal notices required of all meetings and to sign, on behalf of the company, legal and other documents. He may, of course, be assigned other duties when his time so permits.

The Treasurer. The task of the treasurer is to cooperate with the chief executive in formulating financial policies and in supervising the daily activities of the company with reference to financial matters. In a large organization the treasurer should have jurisdiction over the following:

a. The formulation of the financial policies of the company. He should exercise this jurisdiction through the general budget committee, the financial budget committee, the finance committee, and the board of directors. All of these units of organization, however, will rely upon the judgment of the treasurer to the extent which he convinces them that he is worthy of reliance. The treasurer should interpret his responsibility with reference to financial policies very broadly. In other words, he is interested in the efficiency with which the capital of the company is used by all units of the organization. Before he grants additional capital to the various units of the company he should be convinced that this capital will be used profitably by these units.

b. He should be responsible for procuring the capital needed to meet the requirements of all units of the company.

Of course, this statement must not be interpreted too literally for a considerable part of the capital of most companies is obtained by means of securities and the securities are marketed through outside agencies. The day by day requirements of the company are usually met, however, by current borrowing

and the treasurer is responsible for these. In a large company it is desirable that he establish a loan department which will handle these activities.

c. The treasurer is responsible for the handling of cash receipts and for the making of cash disbursements.

This will usually make necessary the establishment of a cashier's department which will have jurisdiction over these activities. A division of the controller's department should be responsible for authorizing disbursements, but the cashier's division of the treasurer's department should be responsible for actually making the disbursements.

d. He should be responsible for the purchase and disposition of all property of the company.

This will include not only the purchase and sale of securities, but also the purchase and sale of real estate. Of course, the purchase and sale of equipment and supplies is a function of the purchasing department. One may doubt the advisability of having the treasurer in control of the buying and selling of real property. He should be given this authority because the investment of the resources of the company in real property and the realization of these properties when they are no longer needed for the use of the company is entirely a financial problem. In other words, when the operating departments agree that they no longer need property which they have used it is the function of the treasurer to obtain from this property the greatest amount of capital possible.

e. In a large company it is profitable for the company to handle the transfer of its stocks and to pay its own dividends. In this case there should be established a transfer division which should be under the jurisdiction of the treasurer.

f. Credits and collections should be under the jurisdiction of the treasurer and consequently the credits and collections department should be a subdivision of the treasurer's office.

To summarize, the treasurer's department may be divided into the following main groups:

- a. Loan division.
- b. Sale and purchase of property.
- c. Cashier's division.
- d. Credits and collections division.
- e. Transfer division.

In some cases there may be other activities which should be placed under the treasurer, but the organization suggested should be sufficient for the typical company.

No responsibility for accounting matters has been placed upon the treasurer. In some organizations the accounting department is under the jurisdiction of the treasurer, but this is undesirable for two reasons. First, the treasurer is usually not competent by training to administer properly the accounting department because he is thinking primarily in financial terms and a large part of the function of the accounting department is to collect and interpret data concerning operating activities which should not be expressed in financial terms. Second, one of the functions of the accounting department is to

serve as a check on the financial operations of the business and it cannot do this as effectively and impartially if it is under the jurisdiction of the treasurer as if it is under an independent executive.

TRENDS IN THE FUNCTIONS AND COMPOSITION OF BOARDS OF DIRECTORS

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Foreword. This study was undertaken at the request of a group of manufacturers who as the result of replies to inquiries had received contradictory opinion relative to the trend of directorate organization and operation. Through the cooperation of W. J. Donald, managing director of the American Management Association, questionnaires were sent to a considerable number of concerns engaged in manufacturing. The study, therefore, does not include consideration of public utilities, banks, insurance companies or distributive corporations. The investigation further limited itself to matters of directorate organization, personnel, and remuneration. Legal aspects, though important, were excluded from the scope of the research.

Conclusions resulting from an analysis of the collected data are presented with reservations. Certain of the questions, particularly those relating to probable future trends, could be answered only subjectively, and such opinions do not represent the combined opinion of any given board. Furthermore, changes which have occurred in directorates during the past ten years have not been of a radical nature. Frequently variations were found to be so slight that their statistical significance is questionable.

In the light of these conditions, it has seemed desirable to present with some completeness the data which have been collected in order that a basis may be available for evaluating the extent of indicated trends, or for reinterpreting the data in the light of additional facts resulting from personal knowledge of the subject.

For such general conclusions as are presented in this paper I assume personal responsibility.

A preliminary survey suggested that certain characteristic differences might be anticipated between the directorates of larger and smaller concerns. The classification in terms of annual sales, of concerns answering the questionnaire follows:

	Number of Concerns
Sales less than \$100,000.....	0
\$100,000 to \$500,000.....	4
\$500,000 to \$1,000,000.....	9
\$1,000,000 to \$5,000,000.....	42
Sales over \$5,000,000.....	62

This tabulation indicated that \$5,000,000 would be a desirable point at which arbitrarily to draw a line between the larger and smaller concerns.

Such a demarcation showed further significance when considered in terms of numbers of employees:

Average number of employees	54 smaller concerns, per cent	62 larger concerns, per cent
Less than 200.....	19	0
200 to 500.....	46	3
500 to 1,000.....	28	8
1,000 to 5,000.....	7	53
Over 5,000.....	0	36

It shows that 93 per cent of the smaller businesses employed less than 1,000 persons, while 89 per cent of the larger businesses employed more than 1,000 persons.

The following classification of the holdings in these two groups of salaried officers who were active in the business was made:

Salaried officers	54 smaller concerns, per cent	59 larger concerns, per cent
Represent all of voting stock.....	18	8
Represent majority of voting stock....	56	36
Represent less than majority.....	15	39
Represent nominal amount only.....	11	17

Stock control in the smaller concerns was found to be to a considerably greater extent (75 per cent) in the hands of men who were active in the business than was the case in the larger businesses (44 per cent).

Figures giving the number of directors and average number per directorate follow:

	55 smaller concerns		62 larger concerns	
	1919	1928	1919	1928
Total number of directors.....	315	333	506	579
Average number per directorate.....	5.7	6.1	8.2	9.3

These reflect a trend during the past ten years toward an increased number of directors per board with a greater expansion occurring in the larger boards.

Opinions concerning the probable future size of boards were classified as follows:

Size of boards	49 smaller concerns, per cent	59 larger concerns, per cent
Will increase.....	27	17
Will decrease.....	12	15
Will show no change.....	61	68

A general satisfaction with the present situation is reflected, although slightly more of the smaller concerns look for an increase in size of boards than do larger concerns.

On the boards of the larger companies the percentage of outside directors (not actively employed in the business) to the total number of directors reported, increased from 34.6 to 36.9 per cent, while on the boards of the smaller concerns the same percentage for the ten-year period dropped from 40.1 to 37 per cent. Both large and small concerns now have, therefore, almost the same ratio.

The result of these changes in the size and composition of an average board is shown in the following table:

	55 smaller concerns, average number of directors		62 larger concerns, average number of directors	
	1919	1928	1919	1928
Directors actively connected with operation of business.....	3 4	3.9	5.4	5.9
Directors not otherwise active in business.....	2 3	2.2	2.8	3.4
Total number of directors (average)....	5.7	6.1	8.2	9.3

It is clear that the smaller establishments enlarge their boards through the appointment of active officials while the larger concerns are drawing upon both inside and outside talent when increasing their directorates.

To the question, Will the number of directors who are also operating executives with salary tend to increase or decrease? the summary of replies is as follows:

Number of operating directors	51 smaller concerns, per cent	59 larger concerns, per cent
Will increase.....	45	44
Will decrease.....	12	14
Will show no change.....	43	42

The table reflects a considerable satisfaction with present ratios, and an equally strong opinion that such operating directors will increase in numbers.

The following table classifies similar questions relating to directors drawn from the outside:

Number of outside directors	49 smaller concerns, per cent	56 larger concerns, per cent
Will increase.....	14	11
Will decrease.....	49	41
Will show no change.....	37	48

This indicates that such directors will not tend to increase in numbers in either group of concerns.

Changes in the principal occupations of directors are shown in the following table:

Principal occupations	55 smaller concerns, per cent		62 larger concerns, per cent	
	1919	1928	1919	1928
Presidents.....	12.1	11.4	9.7	8.6
Vice presidents.....	8.3	8.1	12.5	13.1
Secretaries.....	6.0	6.9	4.3	4.7
Treasurers.....	7.3	8.7	6.5	5.9
Sales managers.....	2.9	3.6	3.8	3.6
General managers.....	2.9	2.1	1.0	.5
Chief engineers.....	.3	1.2	.8	1.6
Other executives.....	7.6	12.0	15.6	14.5
Capitalists (usually retired).....	1.9	2.1	5.7	2.1
Attorneys.....	6.7	3.6	4.5	4.7
Business men (not in this business).....	17.1	15.6	9.9	11.4
Manufacturers.....	5.4	6.9	3.2	4.3
Bankers.....	4.8	3.0	8.1	10.2
Occupations not reported.....	16.8	14.7	14.4	14.8

In considering the smaller *vs.* the larger concerns, comparisons cannot be too finely drawn as terms were not sharply classified. A vice president, for example, may be a vice president and general manager or a vice president and treasurer, etc.

The smaller concerns are showing a tendency to reduce the numbers of attorneys and bankers who have been sitting on their boards. Such reductions are partly compensated for by increases in the appointment of non-competitive manufacturers.

The larger concerns have increasingly enlisted the counsel of bankers and outside business men, while the capitalist, who was usually a retired member of the business, is definitely withdrawing. There is indication that non-competitive manufacturers will be called into service as directors in both groups to a larger extent in the future, and outside business men will continue to occupy an important place on such directorates. The use of the vice presidential title appears to be in greater vogue in large concerns, and the inclusive nature of this term probably accounts for the decline in the incidence of general managers and treasurers during the past ten years. The increasing dissimilarity in the ratios of bankers in the two directorate groups is worthy of note.

A classification of the primary reasons given for presence of directors on boards is shown in the following table:

Reasons for presence on boards	55 smaller concerns, per cent		62 larger concerns, per cent	
	1919	1928	1919	1928
Knowledge of details of business.....	22.0	21.9	24.2	25.0
Sound executive judgment.....	14.0	15.4	13.4	16.7
Important stockholder.....	21.8	16.0	17.5	17.1
Represents important stockholdings.....	7.0	8.4	8.0	8.8
Represents financial interests.....	3.5	2.4	3.4	2.8
Financial counsel.....	5.3	5.4	4.9	4.7
Legal counsel.....	3.5	2.3	3.1	2.5
Knowledge of external business conditions....	7.3	9.8	9.7	8.8
Represents customers or brings business.....	7.2	7.1	5.0	3.7
Brings prestige.....	3.5	4.8	4.3	3.5
Represents allied manufacturing or commercial interests.....	.7	2.4	2.7	2.4
Represents employees.....	1.0	.8	.2	.5
Reward for services.....	3.3	3.3	3.5	3.5

It is evident that in the smaller concerns the percentage of directors who hold their place by virtue of their importance as stockholders, has declined and was, in 1928, about equal to that found in larger concerns. In this

smaller group where the stock control is usually in the hands of active officials the outside director must to an increasing extent prove his value by virtue of some definite service such as knowledge of external business conditions, ability to represent customers or bring business, increase prestige or coordinate allied commercial or manufacturing interests.

In the larger concerns knowledge of business details appears particularly valuable as does sound executive judgment and may account in part for the enlargement of such boards to accommodate a greater number of active officials, and it is interesting to note that those directors whose value has resulted in part from their external influence, *i.e.*, business bringers, prestige bringers, financial representatives, legal counsel, and allied manufacturing representatives, are finding such activities of lessening significance. This trend is, in the main, opposed to that found in the smaller concern. The lowering ratio of significance attached to the representation of financial interests and to financial counsel suggests that the increase in bankers on the larger boards is not due to these causes, but to their powers of business judgment, although they may, in some cases, be representing important stockholdings.

A tabulation of the nature of stockholdings of directors follows:

Stockholdings	276 directors in 55 smaller concerns, per cent		429 directors in 62 larger concerns, per cent	
	1919	1928	1919	1928
Large.....	49	44	48	45
Nominal.....	49	53	47	48
None.....	2	3	5	7

These data suggest policies on the part of both groups that provide new directors serving on enlarged boards with only nominal amounts of stock. While the percentage of large stockholders in both large and small concerns shows a decline over the ten-year period, the proportion of directors who have nominal stock interest or no interest is very slightly increased.

The following summary indicates requirements affecting the amount of stock owned by directors:

Requirements	55 smaller concerns, per cent	58 larger concerns, per cent
No voting stock required.....	24	24
Nominal amount.....	69	69
Substantial amount.....	7	7

This reflects the strong tendency in both groups toward nominal requirements, which frequently are in response to legal regulations.

The appointment of a director to the position of chairman of the board occurs in 28 per cent of the larger concerns and only 6 per cent of the smaller. In the remaining instances, the president performs such functions.

A summation of replies to the question, Will the position of chairman of the board increase or decrease in importance in the future? follows:

Importance of chairman of board	46 smaller concerns, per cent	54 larger concerns, per cent
Will increase.....	31	28
Will decrease.....	13	22
Will show no change.....	56	50

The table suggests that increased use of this office will take place but slowly.

Boards of larger companies also make greater use of executive or finance committees composed of directors, 45 per cent of such boards (forty-nine reporting) appointing an executive committee, while an additional 6 per cent appoint both executive and finance committees. The major reason for such committees was given to be the wide geographic dispersion of directors, although some committees were said to expedite business, or to capitalize intimate knowledge of operating problems, possessed by the members. Smaller concerns appointed executive committees from directors in 23 per cent of the forty-four plants reporting. In both groups, the use of executive or operating committees composed rather of salaried officers reporting to the president were found to be prevalent, 46 per cent of the larger concerns and 25 per cent of the smaller concerns making use of such committees.

The following table classifies opinion with respect to the future trend of executive committees composed of directors:

Use of executive committees	41 smaller concerns, per cent	49 larger concerns, per cent
Will increase.....	42	33
Will decrease.....	9	12
Will show no change.....	49	55

Responses from smaller concerns appear more favorable to development of such committees than do responses from larger concerns, where such com-

mittees are more widely in use. The largest number in each group, however, feel that no change in present status is to be looked for.

The frequency of meetings is shown in the following table:

Meetings	53 smaller concerns, per cent	59 larger concerns, per cent
Annual.....	13	3
Semi-annual.....	11	2
Quarterly.....	32	34
Monthly.....	38	53
Weekly.....	6	8

A tendency toward greater frequency of meetings among the larger concerns is reflected, which would indicate that such meetings are held to be more important by this group of establishments.

Responses to a question regarding the probable future frequency of directors' meetings follow:

Directors' meetings will be held	50 smaller concerns, per cent	58 larger concerns, per cent
More frequently.....	44	34
Less frequently.....	0	0
With no change in frequency.....	56	66

These suggest a considerable minority opinion in both groups that meetings should be more frequent, although the majority appear satisfied with present conditions. Small establishments appear somewhat more interested in greater frequency than do large, a condition which may tend to bring frequencies in the two groups nearer to a parity.

A tabulation of directors' fees is given herewith:

Directors' fees	55 smaller concerns, per cent	52 larger concerns, per cent
Paid to all directors.....	27	17
Paid to certain directors.....	16	39
Not paid.....	57	44

It shows that the larger concerns were more inclined to such payments. A grouping in terms of size of fees is necessarily fragmentary as many concerns did not report on this question:

Size of fees	18 smaller concerns, number	36 larger concerns, number
\$ 5.....	5	0
10.....	7	8
15.....	0	1
20.....	3	17
25.....	1	7
40.....	0	1
50.....	0	2
100.....	1	0
250.....	1	0

Data suggest \$10 as the characteristic fee paid by the smaller concerns, while \$20 is the one most frequently employed by the larger.

In three instances smaller companies are paying annual retainers to all directors of \$1,000, \$600, and \$100, respectively, while one large company reports paying to all directors a retainer of \$500.

Concerns paying such annual fees to certain (not all) directors are classified as follows:

Annual fee	3 smaller concerns, number	5 larger concerns, number
\$ 500	0	1
600	1	1
1,000	2	0
1,500	0	1
6,000	0	2

Such payments are relatively rare in the procedure of the companies reporting. In two additional instances annual payments were made to corporation counsel or to members of the executive committee, but amounts were not given.

Of both larger and smaller reporting concerns 80 per cent stated that directors as such did not share in the profits of the business. Of the remaining number, a portion gave specific data as follows:

	10 smaller concerns, number	11 larger concerns, number
All directors share in profits.....	2	6
Certain directors share in profits.....	8	5

The following table reflects a predominating opinion that directors' remuneration, further than the payment of dividends or directors' fees is not expected to increase in the future:

Other forms of profit sharing	45 smaller concerns, per cent	52 larger concerns, per cent
Will increase	20	13
Will decrease.....	2	6
Will show no change.....	78	81

This attitude is interesting in view of the rather general practice of directorate profit sharing in English and Continental boards.

There appeared to be a greater tendency among smaller companies to pay traveling expenses to directors (74 per cent of thirty-one concerns reporting) than among larger companies (57 per cent of fifty-three concerns reporting), a condition which may be affected by dissimilarities in frequency of meetings and size of directors' fees in these groups. Comments noted on the responses from smaller companies indicated that directors usually resided in the vicinity.

Summary. The directorates of the smaller concerns are relatively small in size and slow to expand with little evidence of desire in this direction. Such growth in size as has taken place has come through the addition of operating executives, while the number of outside directors has decreased slightly, and there is considerable opinion to the effect that any further changes should be in the direction of more inside and less outside directors.

Bankers and attorneys are appearing in lesser degree upon such boards, but their withdrawal is partly compensated for by increases in the numbers of outside manufacturers, while outside business men are continuing to hold an important place in such organizations.

Important stockholdings are a lessening justification for presence on these boards. If an inside executive, knowledge of details of business or sound business judgment is increasingly important, while the director not otherwise employed in the business must command a knowledge of external busi-

ness conditions, an ability to enhance sales through prestige or personal influence, or to effect cooperation with allied interests.

As such boards increase in size, a slight tendency is evidenced for new members to receive nominal stock interests. The appointment of chairman of the board, executive or finance committees, is infrequent in this group and there is little desire for change in these directions. While the most popular meeting period is a monthly one, over one-half of the meetings are held at quarterly or longer intervals but sentiment inclines toward shorter intervals in the event of any change. Less than half of these concerns pay directors' fees, the popular amount being \$10, and there is little evidence of the use or desirability of annual retainer fees or profit sharing for directors as such. Three-quarters of these concerns paid traveling expenses of directors when necessary.

One gains the impression that in these businesses where stock control is largely in the hands of operating officials, there is a growing conviction that directorates should remain small and self-inclusive except in such cases where the advantage of outside memberships can be definitely established. There appears to be a growing awareness, however, that such outside members contribute value which may not otherwise be procured. While the close relationships which exist between stockholders, directors, and operating executives in these businesses, render the administrative activities of the board somewhat less essential to the conduct of the business, there is definite indication that the pressure of business conditions is bringing about changes which are leading to the greater effectiveness of such bodies.

In the larger group of concerns having annual sales of \$5,000,000 or over, the average board is 50 per cent larger than in the smaller group and the trend of expansion is more rapid, increases occurring in both inside and outside members, to the point that about three out of every eight members are not otherwise actively concerned in the business. There is nevertheless considerable opinion to the effect that future changes, if any, will be in the direction of more inside men.

The last ten years have seen the withdrawal of the retired capitalist from such boards, and his place has been taken by the banker and outside business man, both of whom seem to be appointed because of sound business judgment rather than because of specialized skill, personal influence, or position as financial representatives.

The appointment of a director as chairman of the board has occurred in about one-fourth of these companies and the outlook is for a slow increase in this direction. The appointment of executive committees of the board, a practice which is much more prevalent here than in the smaller concerns, shows promise of further slow development. Although over one-half of the directors' meetings occur monthly or oftener, there is an evident desire for more frequent meetings. Directors' fees which are paid in more than half of the companies are popularly \$20 per meeting, while annual retainers or methods of profit sharing are very infrequent. In about one-third of the instances, traveling expenses of directors are paid.

Responses from these larger concerns lead one to believe that it is from these boards that the more significant developments may be anticipated.

During the past ten years the appointment of directors other than the president to the position of chairman and the use of executive committees are instances of definite steps which this group has taken in matters of organization, while the greater frequencies of meetings and higher directors' fees are indicative of the added importance which is attached to their functioning. The striking characteristic is the growing emphasis upon knowledge of business details and sound executive judgment. Whereas the smaller boards are tending to reject stock ownership alone as a sufficient basis for a directorship, large boards have gone a step further and indicated that not only the fact of ownership, but such personal qualifications as knowledge of external business conditions, business-getting ability, and the like, are to take second place before the urgent need of directors who excel in a knowledge of the business and its details and whose statements incorporate a dependable quality of business judgment.

THE FINANCE COMMITTEE

BY JAMES O. MCKINSEY, *Senior Partner, James O. McKinsey and Company; Professor of Business Administration, University of Chicago*

Reasons for the Establishment of the Finance Committee. There has been a distinct tendency during recent years for the boards of directors of corporations, even of moderate size, to take a more active part in the management of the corporations they represent. It has been found that the management problems of these corporations are so numerous and complex that it is not wise to leave decisions with reference to them to the judgment of the chief executive alone. The directors have come to realize that they are responsible to the stockholders for the management of the corporation and that as a consequence they are acting in a fiduciary capacity which places upon them the burden of exercising extraordinary diligence to see that the corporation is managed properly.

Because of this tendency on the part of the board of directors to accept more responsibilities, it has been found that numerous and complex problems are brought to them for consideration. In many cases it has been found impossible for the board, as a whole, to be sufficiently familiar with all of these problems to handle them in an effective manner. As a consequence the board has found it wise to appoint one or more committees which can study these problems in more detail and make recommendations to the board. It is also found that some problems arise between board meetings which require prompt action and it promotes efficiency to have a committee which can act for the board, promptly.

In some corporations there are appointed:

- a. An executive committee.
- b. A finance committee.

It has been found, however, that there is some difficulty in having these two committees function separately. Many of the problems which are referred to the executive committee involve questions of finance which need to be passed upon by the finance committee. In the same manner financial

problems which are referred to the finance committee often involve a consideration of other problems which rightly fall within the province of the executive committee. If there are two committees, delay is likely to result by referring these questions from one committee to the other. This difficulty may be overcome in two ways:

- a. By having these two committees hold a joint meeting when problems are to be considered which fall within the province of each committee.
- b. By combining the committees into one committee which is usually called the finance committee.

In a corporation of moderate size it is usually satisfactory to have one committee and we shall assume in the following discussion that there is only one committee.

Responsibilities of the Finance Committee. The usual responsibilities of the finance committee can be classified as follows:

1. *To Pass upon Major Questions of Policy.* It is impossible to state definitely the kind of questions of policy which should be referred to the finance committee. Generally, any question which is to be considered by the board should first be considered by the finance committee. The board or the finance committee can designate from time to time certain policies on which they wish to pass. With reference to other questions of policy which are not covered by specific instructions, the president or the chairman of the board must use his judgment. The number and kind of policy questions which will be referred to the committee depends to a very large degree upon the size of the corporation, the nature of its problems, the composition of the board of directors, and the ability of the chief executive.

In the case of a new corporation a large number of questions of policy will be referred to the board. After the policies of the company have been established, it will only be necessary to refer to the board and the committee, important changes in these policies. If the chief executive and his associates prove their ability to decide questions of policy, the board will gradually grant them greater authority.

If the board is composed entirely of the executives who are employed in the company, the president will discuss many of these questions with these executives in an informal way which makes it unnecessary for them to be passed upon by the board.

If the board is composed partly of stockholders who are employed in other lines of activity, the wise chief executive will refer all major questions of policy to the board so that he may obtain the benefit of the advice of those members of the board who have an outside point of view.

2. *To Pass on Major Changes in Organization or Major Changes in Personnel.* Students of management have learned in recent years that the form of organization of a corporation is very important and as a consequence boards of directors take more interest in organization problems than in previous years. It is customary, therefore, for the chief executive to secure the approval of the board of directors on major changes in the organization structure of the corporation.

For example, if the chief executive and his associates have decided that the corporation should cease to sell its products through jobbers and develop

a sales organization to sell direct to retailers, this change in organization structure and sales policy should be passed upon by the board and consequently by the finance committee.

If the chief executive decides that a personnel department should be established under the administration of a major executive, this change in policy and organization should be approved by the finance committee and the board of directors.

There is no established policy concerning the executive appointments which should be approved by the committee and the board. It is the opinion of the author that the president should secure the approval of the committee and the board to the appointment of all executives who report directly to the chief executive. By this means, there is a double check on each of these executives. If this is not done these appointments are subject only to the approval of the chief executive. For example, the chief executive should submit to the finance committee for approval the appointment of a sales manager. It is not essential that he submit for its approval the appointment of an assistant sales manager since this appointment would be subject to the approval of both the sales manager and the president which provides for a check on the judgment of the chief executive.

3. *To Pass on the Budgets of the Company.* The chief executive should submit to the finance committee prior to the beginning of each budget period budgets on income, expenses, investments, and finances. If these budgets are properly prepared they will bring in review to the board all the major policies of the corporation, for the budget if properly prepared should be a statement of policy.

For example, the sales budget, which is a major division of the budget on income, should present the sales policies which the sales department and the chief executive think should be followed.

If comprehensive budgets are submitted to the finance committee and if monthly comparisons between the budgeted performance and the actual performance are submitted to the committee for its consideration each month, it is enabled to exercise an effective control over all the activities of the business. Usually the committee reserves to itself the right to pass on major expenditures even though these are provided for in the budget.

It will be seen that if the program we have outlined for the finance committee is followed its functions may be summarized as follows:

- a. It passes on the policies of the company.
- b. It passes on the organization and personnel responsible for carrying out these policies.
- c. It passes on the program of these executives by means of the budget. As a consequence it is enabled to change the plans of these executives prior to their execution, if it so desires.
- d. It checks up on the efficiency of the executives by means of monthly reports which show a comparison between plans and accomplishments.

It will, of course, be understood that under special conditions other problems may come before the finance committee, for example, in cases of mergers or liquidation of companies, many special problems will need to be brought to the consideration of the finance committee. It is never possible to state

its responsibilities in detail and it is always necessary to leave these responsibilities in each specific case to some degree to the judgment of the committee and the chief executive of the company.

Composition of the Finance Committee. The finance committee should be composed entirely of directors of the corporation. The committee at its discretion may have executives of the company who are not directors confer with it. If the board of directors is composed partly of executives of the company and partly of stockholders who are not employed by the corporation, it is wise to have both types of directors represented on the finance committee. Whether the majority of the committee should be composed of executives or stockholders who are not executives depends to a considerable degree upon the special abilities of the members representing each group. In any case it is desirable to have both points of view represented on the committee.

There is no uniform practice with reference to who should be the finance committee chairman. In different corporations the following serve as chairman:

- a. Chairman of the board.
- b. President.
- c. Member of the board employed by the corporation for this particular position.
- d. Member of the board not in the employ of the corporation.

In the opinion of the author it is in most cases preferable to have the chairman of the board or the president serve as chairman of the finance committee. These executives are responsible for the management of the business and should be in a position to function most effectively as finance committee chairman.

If a third executive is employed for this position, there is a tendency to divide final responsibility for the management of the corporation. There are, of course, special conditions where it is desirable to have neither the chairman of the board nor the president, serve as finance committee chairman. For example, in the case of financial reorganizations, a representative of the financial interests which assume responsibility for the reorganization may serve in this capacity.

In other cases the chairman of the board may not be active in management of the business and the president may not be of the type who can function most effectively as chairman of the finance committee. In this event a third executive may appropriately be employed for this position.

Relation of the Finance Committee to the Executives of the Company.

The finance committee represents the authority of the board of directors and is, therefore, superior to any official of the corporation. As a consequence the president of the company and the chairman of the board are subject to its jurisdiction and should report to the board through it.

In some cases the treasurer and the controller report directly to the finance committee. It is contended that this is desirable because it gives the finance committee, as a representative of the board, direct control over the financial and accounting activities of the company and consequently a direct check on the activities of the operating executives of the company. In the author's opinion this plan is not desirable in most cases.

The board of directors acting through the finance committee should hold the chief executive of the company directly responsible for the management of the business. It is a fundamental principle of organization that authority and responsibility should go hand in hand. If the chief executive is to be held responsible for the management of the business he should also be given authority over all the activities which contribute to the success of the management. It seems proper, therefore, that all of the employees of the corporation should report through the chief executive to the finance committee and the board.

It is impossible in a brief discussion of this nature to deal with all the special conditions which may exist in some cases. The purpose of this discussion has been to outline the responsibilities and organization of the finance committee in a typical corporation operating under normal conditions.

THE COMPTROLLER

BY J. P. JORDAN, *Partner, Stevenson, Jordan, and Harrison*

Probably no official in industry or in commerce has so many varying scopes, duties, responsibilities and lack of responsibilities as the individual called the comptroller. He varies in scope and dignity all the way from the bookkeeper to almost the chief executive officer of the company. One of the principal uses of the title is to bestow it in place of a raise, and thereby it has become a very much misused and beclouded handle.

As a matter of fact, whether he is known as comptroller or by any other title, there is room in any and every organization for someone to fill the niche which we will discuss. By a process of evolution, we have come to believe that there are certain definite functions which make up the job called comptroller, mostly because of his connection with the statistical work which he supervises, but partly because there are a lot of odd little things which are thrown into his bag of troubles on account of there being no other place to put them.

It is quite readily conceded that the primary duties of the comptroller are in respect to the record procedures of the company, and that the corollary is the responsibility for office work in general, as most of it is concerned with record procedures anyway. The usual questions which come up, however, are as to the extent of the control held by the comptroller, both over records and office procedure, particularly in offices other than that of the comptroller himself.

In order to approach the discussion of this subject with something definite in mind, there is now given a quotation from the manual of a large company giving the duties of its comptroller:

Comptroller's Department

General Scope. The comptroller's department is responsible for all records and reports of every description throughout the company and its subsidiaries, from three very important angles:

1. From the standpoint of correct assembly of original data, the recording of same, and the compiling of proper statements and reports.

2. From the standpoint of the intelligent interpretation of all statements and reports.

3. From the standpoint of cooperation with all responsible officials and department heads to insure the fullest and most efficient use of the records for constructive betterment of all operations.

Included in the foregoing shall be the supervision of forecasting and budgeting in all departments of the company and its subsidiaries.

In addition to the matter of records, statements, and reports, the comptroller's department shall be responsible for all clerical and office methods and procedures throughout all departments of the company and its subsidiaries.

The comptroller's department shall have auditing powers of all receipts and disbursements and property of every description.

The carrying out of the responsibilities of the comptroller's department shall be accomplished by two methods:

1. By direct physical jurisdiction where such jurisdiction is indicated as best.

2. By functional jurisdiction where it may seem best that the actual performance of work should be under the physical jurisdiction of heads of departments other than the comptroller's, but where the methods and procedures used will be specified by the comptroller's department.

Title of head.....	Comptroller
Located at.....	Headquarters
Reports to.....	Chief executive

Responsibilities of Comptroller. The comptroller is responsible for maintaining an economical organization for the purpose of devising, installing and operating efficient methods of gathering data, assembling data, and preparing intelligent reports and statements of all operations of the company and its subsidiaries; and also, for the organized supervision of all office methods and procedures throughout all departments of the company and its subsidiaries.

An equal or more important responsibility of the comptroller is that of so cooperating with all the officials and department heads of the company and its subsidiaries that the entire organization will be constantly in possession of complete facts as to present and forecast future conditions, and of assisting all officials and department heads in every possible manner in their work of bettering previous results.

Specific duties of the comptroller include the following:

1. To supervise all subsidiary divisions of his department.
2. To constantly work to reduce the cost of all record and office work without curtailing the value of the accounts, records, and reports.
3. To keep fully informed as to all labor-saving devices for office work of all kinds and recommend same where savings may be made.
4. To supervise the standardization of all record procedure in all offices of the company and its subsidiaries.
5. To supervise the standardization of all methods and office procedures in all offices.
6. To provide for approval of all forms before adoption by any department of the company and its subsidiaries.
7. To provide for approval of all requisitions for printed matter.

8. To supervise the taking of all inventories of the company and its subsidiaries. In addition, the comptroller may, at his discretion, cause inventories or checks of stock records and inventories to be taken at any time.

9. To supervise the preparation of all tax reports of the company and its subsidiaries.

10. To supervise the preparation of all forecasts and budgets throughout the company and its subsidiaries.

11. To maintain, either personally or through qualified assistants, a constant touch and cooperative relation with all responsible officials and department heads whereby the operations of the company may be constantly improved.

12. To interpret, when necessary, by a brief guiding résumé or otherwise, all statements and reports whereby executives and department heads may proceed without being obliged to study many detailed figures in order to ascertain points needing attention. This will require study on the part of the comptroller or a qualified assistant of all statements and reports before they are released by his office.

13. To interpret more effectively the course of results, the comptroller shall supervise the preparation of such special statistics as are required; and shall cause to be prepared such graphic and other presentations as shall strikingly and effectively present a comprehensive picture of pertinent facts and trends.

14. To include among other auditing operations a specific audit and study of all personal expense accounts of every description with recommendations in connection therewith.

15. To make any special investigation of any matter at the request of the board of directors, the chairman, or the president.

16. To examine and endorse upon each proposed expenditure for additions to capital accounts an opinion as to their earning value to the company and its subsidiaries. In like manner, the comptroller shall examine and report upon all proposed expenditures for repairs or replacements above a figure fixed by the management or in accordance with any policy which may be established.

17. To provide close checks on the progress of expenditures, purchases, or other commitments against all capital additions and specially approved repair or replacement items, in order that such items may be properly controlled. In performing this duty, the comptroller may, as he deems necessary, enlist engineering aid in appraising the progress of work in order that a proper control may be assured.

In reviewing the duties of a comptroller as just described, it is obvious that the setting up of such duties and the scope thereof must be fitted to the size and nature of each company. There never was and never will be any such thing as a standard definition of the scope of *any* official function in any company. Every company differs. But there are such things as rather fundamental principles, and it is with those that we may well concern ourselves, for if we do, each one can then analyze for himself the conditions of his own business, whether it be large or small, and can apply these fundamentals to the circumstances which may be found to exist; and therefrom construct a very satisfactory set-up of duties for the particular comptroller.

Interpretation of Statements. How many men holding the title of comptroller purely and simply from the standpoint of bookkeeping experience can qualify on the interpretation of statements? The day of saying "Well,

that's what the figures turned in say" has long since gone by. The comptroller's department must know enough of the operations, the figure results of which are being recorded and presented, to determine what the figures mean and to be able to interpret them in language which is the language clearly understood by the department heads concerned.

To do this means more than appears on the surface. It means that every assembly of figures, either of costs of production in all its ramifications, of country wide sales, of branch selling costs, of engineering, general, and all other such must *signify* something. Every group of figures must represent some activity for which someone is responsible. And no two responsibilities should be mixed up in one exhibit of figures. Two or more exhibits of figures, however, may be made for any one responsibility.

The main point is that no comptroller's department onto its job can afford these days to be "figure butchers," meaning the chopping up together of a lot of figures which lead nowhere and mean nothing. The comptroller himself should know enough about the jobs of every other department head to be able to talk to each in his own language. And the staff of the comptroller should likewise know enough about the ramifications of the business to recognize good from bad figures as they are assembled.

Do not mistake the object of this specification of knowledge necessary on the part of the comptroller and his staff as meaning anything beyond the permitting of intelligent compilation and interpretation of figures. Under no circumstances whatever should the comptroller or any of his staff presume to tell other department heads what they should do, as this would be fatal. Not only would it irritate the department heads, but it would also usurp the prerogatives of the chief executive. In fact, *interpretation is even a long way from advice.*

Use of Statements. What is to be gained by compiling really good figures if no one uses them? Therefore, after preparing perfectly fine and prompt records of results, the next great duty of the comptroller is to get them used. In most cases this is a real job.

Every comptroller must sell his wares. It is not enough to prepare fine statements and think the job is done. It has only started. It is up to the comptroller to interpret the results in clean-cut résumés and then follow through with enough contact to see that action is taken—not from a forcing standpoint, but from a standpoint of the great value lost to the company if the points brought out by the figures are not acted upon. This takes tact, salesmanship and a real human spirit of cooperation.

Personal Characteristics of Comptroller. At this point, let us think of the characteristics of the comptroller as an individual. Here is a man who has under his control the assembling of figures which present the results accomplished by everyone. Much good or much damage can be done by the comptroller as a result of the way he handles these figures, the way he presents them, and the way he talks about them.

It is obvious that the personality of the comptroller must be human in every respect. He must be sympathetic and still firm. He must be one who will study and present his points from the standpoint of absolute cooperation. He must guard against sharp words and any derogatory remarks.

In other words, he must be an honest, straightforward, cooperative and constructive type of individual, always ready to assist and always thinking of ways and scheming to help all of his associates to produce better results.

Exercise of Responsibility. The comptroller may exercise his responsibility in two ways as specified in the manual: first, by direct jurisdiction, and second, by functional jurisdiction. In this connection there have been many *impasses* avoided by this second method of jurisdiction—functional. It may pay us, therefore, to discuss this in greater detail.

Granting for the time being that the comptroller should have control over all office procedures, it is quite out of the question for the comptroller to have any direct jurisdiction in offices other than his own; as, for instance, the selling department offices. No man can serve two masters, neither can two masters direct one man. Therefore, the actual physical jurisdiction of office work must quite necessarily belong to the head of whatever office is in question.

But, if any degree of standardization is to be maintained, a complete avoidance of duplication of work accomplished, and the greatest efficiency of office operation reached, the matter of what records are to be kept, the equipment to be used, and all such features in every office must come under the indirect or functional jurisdiction of some central head, preferably the comptroller.

It is not unusual, when no central control has before existed, to find perhaps scores of reports and records which may finally be dropped on account of similarity or because their usefulness has passed. A central control exists to guard against such a condition, and still to give everyone everything they need in the shape of reports and records.

It is to be conceived, therefore, that the comptroller, an individual trained and specializing in accounting methods, in report compilation and presentation, in office procedures and all such mechanisms, is the logical person to be the central clearing house for all office procedures, either by virtue of direct jurisdiction as in his immediate department, or by functional jurisdiction throughout all departments where the physical or direct supervision is centered in those departments.

Executive Relations of Comptroller. The comptroller must be an individual in whom great confidence may be reposed in respect to secrecy as to projected plans affecting any phase of the business. An executive often wishes to consider certain changes in terms of dollars. The comptroller is consulted, asked to transpose such thoughts into dollar terms. In all such cases he must be secretive without affecting his relations with others. And also, may I add, without becoming subject to any enlargement of his cranium because of the feeling that he is a confidant or special adviser to the chief, when as a matter of fact he is simply the only one who has the figures to give. If he can develop into a real advisor, more power to him. But such a development will come only through his becoming a tower of strength for his chief because of a well-balanced business head, rather than through the route of happening to be the only one who has the figures desired by the chief. If, however, the comptroller *does* perfect himself in his knowledge of the business, and develops a clear-headed, clean-cut business mind, no individual has a

more wonderful opportunity to develop into really valuable executive timber.

Duties of Comptroller. Let us pass now to the specific duties of the comptroller as shown in the manual presented above:

Duty 1, to supervise all subsidiary divisions of his department, is obvious. Later on, a definite discussion of these divisions will bring out more clearly the organization of the comptroller's own department and his relation to other departments.

Duty 2, to keep down the costs of record and office work, is liable to hit many comptrollers rather hard. It is so easy to check up other departments but forget *our own costs*.

Duty 3 means that the comptroller must be fully informed as to all kinds of labor-saving devices for office work. This requires not only constant contact with manufacturers of devices but also attendance at business shows, and all such means of keeping up-to-date.

Duty 4, standardization of methods of record procedure, is of utmost importance, as it includes also the problem of man power, the training of clerks whereby they may interchange at any time, and all such. Also, consolidation of accounts for statement purposes requires a high degree of standardization.

Duty 5, to standardize office procedure, is a natural result of keeping up-to-date on office devices, and of studying the standardization of all kinds of clerical methods.

Duty 6 is very important. This calls for approval of all forms before adoption by any department. The performance of this duty saves thousands of dollars for any company, as it provides a definite safeguard against the use of forms which entirely or nearly duplicate others, against the setting up of forms when something better may be substituted, against forms which may report items which, with slight alteration, may be included with some other information, and so on.

Duty 7, to approve all requisitions for printed matter, is for two main purposes:

a. To stop or limit orders for printing of forms which are about to be changed.

b. To assure the carrying out of Duty 6 in cases where certain other department heads may attempt to "railroad" a form which has not been approved by the comptroller.

Duty 8 is that of supervising inventories. This duty is, or should be, indisputable. Actually, an inventory is a form of audit. Actually also, the methods of taking an inventory are largely clerical in nature, both as to the forms to be used and as to the pricing thereof.

Duty 9, that of the preparation of all tax reports, is a natural function of the comptroller. True enough the legal fraternity has to a considerable extent become involved; but this would probably never have happened, to the extent that it has, were it not for war-time experiences.

But, even though there probably might be more or less necessity for contact with the legal side of the business, the great preponderance of work in respect to taxes must always be done by the comptroller's department.

If so, this department should perfect itself in its knowledge of tax requirements and consult the legal departments only for advice on certain points.

Duty 10 is that of the preparation of all forecasts and budgets. In the carrying out of this duty there occurs the natural function of preparing a picture of the future in such manner that the actual accomplishments may be chalked up against the forecasts, and real value be obtained from the comparison.

In carrying out this duty the comptroller's department works closely of course with all other departments. All quotas, sales, manufacturing and other items must come from other departments; therefore, all forecasts and budgets become a real matter of cooperation with the comptroller's department the central point.

Duty 11 is that of keeping in constant touch with everyone from whom it may be determined in what manner the comptroller's department may be of the greatest assistance to the line departments.

Duty 12 is that of the interpretation of all reports and statements. This has been previously discussed.

Duty 13 covers the statistical function of the business other than the regular reports. It includes the many products of a tabulating department, covering all sorts of sales and manufacturing statistics and their presentation in either report or graphic form or both. The one great factor in the carrying out of this duty is the real working knowledge of the necessary information required by every department in order to better its results. Graphs, statements, reports and analyses which merely gratify curiosity or whim have no place in this category.

Duty 14 implies that all auditing is strictly a function of the comptroller's department, and such a fact should be specifically mentioned. It is taken for granted that the comptroller's department is responsible for audits of all kinds which safeguard the integrity of all disbursements by definitely approved vouchers, which vouchers pass to the treasury department for payment. This duty is specifically set forth under responsibilities of the Comptroller.

Duty 15 covers the performance of any special investigation required by the directors or officers of the company.

Duties 16 and 17 are very important. No department is possessed of so much information as to the probable results to be obtained from capital outlay as is the comptroller's, provided it has maintained the full knowledge of operations that has been described in the foregoing.

It is perfectly reasonable to expect the comptroller's department to audit a projected move as it audits moves which have already been made. Further, it is well known that capital expenditures made without a continual check always run over estimates more or less; many times through lack of knowledge of how the cost is mounting. At other times an excess cost is incurred deliberately. In all cases, a close check-up should be a continuous duty of the comptroller's department.

The comptroller does not approve or disapprove projected capital expenditures. He simply endorses an idea as to their earning value to the company. After this, when all the facts are known, it is up to the general management to make its decision.

Organization of Comptroller's Department. To carry out all the foregoing responsibilities, there is need that the comptroller's department itself be well organized. As has been stated, the comptroller discussed in this paper is in a large company. Basic characteristics, however, apply equally to large and small companies. It would be very easy to condense all that is described in this paper into a set-up for a small company, simply by combining operations.

The carrying out of all the preceding would indicate subdivisions of the comptroller's department along the following lines:

1. *General Accounting.* General ledgers, journals, etc.
2. *Accounts Payable.* Certification of all vouchers for disbursements.
3. *Accounts Receivable.* All customer accounts.
4. *Invoices.* Invoicing of all sales.
5. *Claims.* Custody and disposition of all claims of any nature.
6. *Sales Records.* Accounting for all sales.
7. *Cost Accounting.* Responsibility for cost accounting through either direct or functional jurisdiction, but always responsibility for the methods of same.
8. *Timekeeping.*
9. *Pay Rolls.* Direct or functional control of all timekeeping and pay rolls to fulfill integrity of pay rolls and of accounting procedures.
10. *Inventories.* Functional control to assure accuracy of physical count, pricing and grouping. This includes perpetual and physical inventories.
11. *Coding and Tabulating.* Where electrical accounting is used and where details are tabulated at central or decentralized points.
12. *Methods of Office Procedure and Forms.* Responsibility for all office methods and preparation or approval of all forms, etc.
13. *Forecasts and Budgets.* Assembly and presentation of all forecasts and budgets.
14. *Auditing (Including Traveling Auditors).* All auditing not otherwise automatically provided for, such as in accounts payable division.
15. *District Accounting.* Responsibility of a functional nature for all accounting outside of home office.
16. *Statistics.* All regular and special statistics in statement or graph form.
17. *Office Operation.* Responsibility for all office services which come under jurisdiction of comptroller's department, including: janitors, phone service, files, stenographers, messengers, etc.
18. *Cost Methods.* Study and installation of cost methods in all departments of the business.
19. *Tax Reports.* Preparation of all tax reports.
20. *Miscellaneous.* Royalties, dividend and capital stock records, group insurance and other employee records, contract files and records, appropriation records, special assignments.

General Comments. The comptroller is a staff officer. He can have authority only over his own organization and through a functional channel over methods of doing record and office work. His contact with all other department heads is for the purpose of providing knowledge, without opinions of the actual operation of the departments.

The records which are the responsibility of and under control of the comptroller are those of a financial and statistical nature. Corporate records, other than possibly those of capital stock, will fall outside his domain.

While the comptroller must be very deeply concerned with all investments of the company, of a plant or capital nature, he may or may not be concerned with other investments, unless such investments are in the nature of broadening the facilities of his company, such as in other manufacturing corporations. And, he may also be vitally interested in investing in other companies for the purpose of increasing the hold of his own company on prospective business.

The comptroller, being of an analytical nature, is logically the one to examine and report on all projects where an investment in the same depends on operating results to produce a return on the money invested. Other investments, however, such as bonds, etc., require no attention from the comptroller, being entirely of a financial nature.

The comptroller may well have the responsibility for use and occupancy insurance and for compensation and liability insurance, since these depend on inventory and payroll records. This does not necessarily cover contracting for the same, as such function may better be included with the handling of all other insurance by some other officer.

The Ideal Comptroller. If we may picture the comptroller and his department as fulfilling a staff function, controlling directly or indirectly all methods and operations of records and office procedure which is so intimately tied up with records, giving facts intelligently as to current results with forecasts of the future, helping every line officer in every possible manner to better results through the interpretation of what is actually taking place, we can picture an officer who can, if he will, make himself a tower of strength second to none in the management of a business.

THE FUNCTIONS OF THE AUDITOR

BY C. E. JARCHOW, *Assistant Comptroller, International Harvester Company*

The term "auditor" is frequently used as a designation of the accounting officer in complete charge of all accounting activities. This is particularly true in small companies. However, we refer here to the accounting officer in charge of that special branch of accounting work which generally comes under the heading of "audits and investigations."

It goes without saying that audits and investigations are an important accounting activity in all businesses. In a small business the work is frequently done by the same individual who is responsible for other accounting work. In a large business it is of sufficient importance to warrant the creation of a special department looking after that branch of the work.

Generally speaking, the auditor, as used in this sense, should report to the comptroller or possibly to the chief accountant or general auditor, depending upon the form of organization. In some cases the auditor or chief of internal audits, as he might be called, reports to the treasurer, but this form of organization does not insure the same degree of financial control.

Responsibilities of the Auditor. The responsibilities of the auditor will naturally overlap somewhat those of other accounting executives. They

include the verification of all records and a more or less constant review of various departmental activities, particularly in their ultimate effect upon company finances. The work of the auditor should not be confined to the mere checking of the figures, but should go beyond this and include the study and interpretation of the results of operations.

In considering some of the specific responsibilities of the auditor, let us assume a typical business, manufacturing and selling a certain article, in which his duties might be divided into three principal classifications:

1. Sales and distribution.
2. Manufacturing.
3. Head office.

In the sales and distribution division let us further assume that the business is conducted through *branch houses*, located in different parts of the country, selling goods, making collections, keeping records of account, etc. The branch organization consists of a branch manager, in charge of sales and collection activities, and an office manager in charge of accounting and financial work reporting to the comptroller or general auditor. The work of the auditor with respect to branch houses will include the verification of cash receipts and disbursements, occasional verification of inventories, accounts and bills receivable, and other assets and liabilities. In addition to this, he will ascertain whether or not branch managers are departing from sales policies laid down by the home office. It is entirely possible that a branch may be obtaining a large volume of business by undue extension of credit, or by making promises or guarantees contrary to these policies. This should be set out in the report of the traveling auditor and brought to the attention of the officer in charge of the sales division.

The auditor will assume supervision over the office personnel. He will ascertain whether or not the accounting system and the methods of internal check are as good as they might be; whether or not full advantage has been taken of modern office appliances, etc.

In the *manufacturing end* of the business, some of the functions I am going to mention might possibly come under the cost accountant, if there happens to be one.

The function of the auditor with regard to the manufacturing division will include the verification of factory records, occasional verification of inventories and basis of valuation. The method of accounting for the receipt and storage of materials, and for the issuance of materials to factory departments should be reviewed. The system employed for releasing materials from the factory should be investigated to guard against materials being taken from the plant without proper authorization.

The safeguarding of payrolls should be carefully reviewed. The auditor should look into capital additions, see that they are properly authorized, that amounts spent are within the appropriation and charged to the proper account.

As for the operating methods at the factory, the auditor should from time to time make studies of the relative efficiency of one plant with another and of the various departments within the same factory. Naturally, he is not

expected to make recommendations which would ordinarily come within the scope of the engineering department; but as there are many matters which will come to his attention he should be in a position to suggest improvements in factory methods, possible reductions in cost, etc.

The auditor's function at the *head office* of the business will include the periodical verification of cash and securities, inventories, receivables and other assets and liabilities not included in the audits at branch houses and plants. In addition to this he will make special investigations of any phase of the company's business that might demand attention.

Other special matters which should come within the scope of the auditor are:

1. Following up long-term contracts to see that no feature of the contract is overlooked.
2. Reviewing, periodically, special agreements such as royalty agreements, etc.
3. Inquiring into the sufficiency of the amount of insurance carried, into bonding of employees, etc.
4. Reviewing work done in other departments of the business to ascertain whether or not a duplication of effort exists, or whether some part of the work in one department cannot be done to better advantage in another.
5. Looking into methods of office routine and modern appliances to see that full advantage is being taken of them.

The natural line of promotion for the auditor will be to the position of chief accountant, general auditor or comptroller. The opportunities which the auditor has for reviewing many phases of the business should fit him for these positions.

The relationship of the auditor to the public auditor depends largely upon the thoroughness of internal audits. If a strong audit division is maintained within the company, it goes without saying that the public accountant need not make the same detailed verifications, that would otherwise be necessary.

FUNCTIONS OF THE CHIEF ACCOUNTANT

By ARTHUR PERROW, *General Auditor, Illinois Bell Telephone Company*

One of the outstanding functions of the chief accountant, that is, the chief accounting officer, regardless of whether he be called general auditor, chief accountant or some other title, is, with the cooperation of his superiors and subordinates, *to have departments know the services* which the accounting department stands ready to render to the production, sales, and other operating units. In other words, the accounting department must sell its important but sometimes more obscure services of historical analyses, comparative data of sales and costs, economic forecasts of future trends of the particular business, as well as business generally, etc., statistical compasses without which true success in any enterprise is difficult, if not impossible, to achieve and maintain.

It should be borne in mind that a *real distinction exists between accounting and auditing*. It might be said that accounting is the basis of principles and procedure, combining factors of efficiency and economy and having in view the ultimate effect of any proposal on the income statement or balance sheet. Auditing work, on the other hand, is intended to verify the processes set in motion by the accountant and insure that every approved method and procedure is actually being carried out, that every loop hole is protected against dishonesty or falsification of data. The chief accountant, therefore, should have active supervision of the accounting department including charge of the general books and other records. He should be responsible for the application of accounting principles or methods of procedure including cost accounting both as applicable to (a) manufacturing or production, and (b) selling or administration. He should be responsible for such a classification of accounts (approved by the comptroller) as will prove a proper framework for securing the information to be presented to the executives with a minimum of delay, in the form of suitable periodic reports.

Centralization of Accounting. In addition to his supervision of the accounting department, the chief accountant, acting through the comptroller, has functional control of the accounting records in all units of the business. The functions of the chief accountant depend largely upon whether accounting control is centralized. The present tendency seems to be toward centralization of accounting control in the general offices of the company, because the records can be brought under the direct supervision of the chief accountant (and therefore under the indirect supervision of the comptroller), which tends to promote accuracy and efficiency. As the volume of work increases, higher grade supervisors can be employed with the resultant opportunities for greater initiative and the development of division heads and officers of the company. Finally a large volume of work thus concentrated permits the release of man power for better use by securing mechanical equipment and other time-saving devices.

Of course, centralization should not be carried out to the extent of removing all administrative data from the local forces. A proper system of reports for the guidance of the local people should be maintained in order to minimize this condition.

It has been said that "accounting serves to rationalize business administration." The chief accountant should see to it that the principles of accountancy have been extended to every department of the organization, that current records are made of purchasing and production methods and costs, marketing, personnel, investment, income, and other related matters. In this respect the chief accountant recognizes that the success of the enterprise is dependent upon the costs of production and marketing being reasonable, that the cost level of the business is in line with a figure which will permit of competition. These proper prices will be established by effecting economies in the way of increased efficiency and reduction of waste, which can be measured only through accounting data.

Relation to Office Manager. The head of the accounting department should not be limited in the organizing of his entire department and ordinarily should supervise, indirectly, all related activities. In order to relieve him of

many details common to several divisions, it might be more economical to have an office manager reporting directly to the comptroller.

It has proved satisfactory to have the office manager take charge of a central stenographic bureau, incoming and outgoing mail, the employment of office boys; to be custodian of office supplies; record absences, tardiness, etc., thereby insuring uniformity of policy throughout the department or the company. Therefore, the question as to whether or not he should report to the chief accountant or comptroller depends entirely upon the amount and kind of work which can be assigned the office manager and, also, upon the personality of such an individual.

Research Work. It would seem that, with the increasing accounting complications of business and the demand for ready and significant data for the guidance of executives, research work should be regarded as an indisputable activity of the chief accountant's staff. Of course, it would depend upon the size and nature of the business, the availability of analysts on the chief accountant's staff, the cost and use made of such research work, etc. Keeping in touch with what is going on in other industries will result in more and better cooperation between industrialists, thereby helping to lubricate this great business machine which is moving forward, gaining momentum and effectiveness day by day.

The accounting analysts can contribute much toward keeping executives in touch with the best current thought on the many "hows" of steering a successful business enterprise. Further, it should be generally agreed that methods, of say ten years ago, are more or less obsolete today. The increasing tendency to use statistical analyses makes it incumbent upon the accountant to introduce the most scientific methods of accounting procedure so that statistical deductions will be most significant.

Financial Statements. Proper financing depends entirely upon correct accounting which underlies the determination of company policy. Among items which relate to both accounting and finance are depreciation, treatment of reserves, good will, valuation, budgetary matters, stock and bond issues, handling of sinking funds, redemption of outstanding obligations, etc. Therefore, in case the accounting and financial organizations are under the direction of a comptroller, these data which combine accounting and financial facts might preferably be prepared by the chief accountant in collaboration with the treasurer, but approved by the comptroller before being distributed in report form.

Status of Chief Accountant. The chief accountant whom I have been endeavoring to portray is already well equipped to handle almost any kind of a job and should be particularly well qualified for promotion to the position of comptroller. His contacts with the heads of the various departments as well as his numerous other activities should have been more far-reaching than those of any other subordinate of the comptroller so that, logically, the chief accountant is the comptroller's "right-hand man," conversant with accounting, financial, auditing, and other related activities of the entire department.

Accountancy is a division of business which calls for men of initiative, who have a constructive turn of mind. If the accountant avails himself of his

opportunity, his progress should not be restricted. Here, however, we have a personnel problem. If the chief accountant is by education and experience the purely technical type of personality who does not invite contacts with other officials, then it might be better to choose for the comptroller the executive type who, although perhaps lacking accounting technique, possesses a personality and general business acumen more in line with the needs of that executive position. But it is assumed that such a situation would be obviated by the selection of the proper person for the position of chief accountant, where the desirable personality referred to is also requisite to best company results.

Relation to Statistics and Budgets. The chief accountant should so design the accounting structure as to permit the compilation of significant statistical data. Therefore, it follows that the chief accountant should consider whether any proposed accounting method lends itself to ready statistical analysis of units of quantities, costs, time and place. All business is affected, more or less, by internal and external factors, and statistics should disclose what is going on. The raw material of truth is facts and just those facts are the stepping stones to right decisions.

If the business is sufficiently complicated, a statistician should be on the chief accountant's staff, whose duties would include the scientific marshalling of important data for the ready guidance of executives. In large companies the statistician works in close cooperation with the chief accountant but may report directly to the comptroller. Graphic presentation is a comparatively new equipment in the ranks of industry and is becoming increasingly indispensable. The accountant plays no small part in the development and use of those accounting facts which should convincingly suggest to the heads of the respective departments the necessity for particular action. The chief accountant should keep in touch with the so-called forces of the business cycle; that is, just how the company's operations have been and will be affected by the liquidation, depression, revival and prosperity of general business. Without this information he cannot talk the present day language of the executives.

Upon the data being received by the comptroller for coordination of the departmental budgets, the chief accountant should completely analyze the proposed program in the light of available information and advise the comptroller of the result of his critical analysis. The accounting and statistical points raised by the chief accountant will probably be referred to the budget committee by the comptroller. After the budget is approved, it becomes the function of the chief accountant to supervise the periodic comparisons of estimates and actual results, advising the comptroller currently so that the latter will be acquainted with all departures from the approved program and either have such differences reconciled or take executive action in the matter—to the president or general manager.

CHAPTER V

CORPORATE FINANCING

BY A. C. HODGE, *A. G. Becker & Co.*

Introduction. The purpose of this chapter is to deal with some of the problems faced by the financial executive in connection with securing and conserving capital to be employed in carrying on corporate activities. Capital funds to be employed by a corporation must be obtained from savings, either of the corporation itself or of individuals. If obtained from outside, capital may be secured from the sale of securities (a) direct to the individual investor, as has been done in a few cases by utilities and by some new and small corporations; (b) to the individual investor through the medium of the investment banker; or (c) to institutional investors, either direct or, more usually, through the investment banker. Only in rare cases is it either possible or desirable to secure outside capital without employing the investment banker as a middleman.

The problem of securing capital for corporate use is continually changing in aspect, being affected by the business cycle, the purchasing power of the dollar, the rise of new underwriting and distributing agencies, the development of new institutional investors, and in fact, by any change in the industrial or financial structure or in the investment habits of individuals. For this reason, it seems desirable to preface our discussion of this problem with a brief resume of the trend of industrial financing during the past decade.

Recent History. The enormous demands on industry brought about by the war naturally resulted in a very great expansion of credit in the United States between 1915 and 1918. This took the form of long-time financing as well as of commercial credit, being greatly facilitated by the operation of the new Federal Reserve System. This period was followed by one of deflation and contraction of credit, a logical reaction and entirely to be expected. Many of the strongest concerns in the country, however, failed to adjust themselves to conditions quickly enough. This was a hectic period for the bankers, who found themselves extensively engaged in rescue parties. Credit resources of commercial banks were strained to the limit. Companies who had not been borrowers for many years had many millions outstanding in commercial paper at 8 per cent. Much temporary financing was done in the form of short-term notes at high rates of interest. Preferred stock bearing 8 per cent dividend requirements and callable at high figures was sold, often at a considerable discount, and long-time bonds bearing coupons at 7 per cent and higher were only too common.

All this, of course, was tremendously expensive, but a most salutary lesson. The year 1921 marked the beginning of a remarkable evolution in management, with respect to planning and control. In most of the large and progressive companies, definite organization plans, defining authority and responsibility of executives, were adopted. Careful studies of procedure were made, and written standards of procedure were used to facilitate and control routine jobs. Complete and efficient budget systems were installed, making possible the establishment of standards of performance and a check on their attainment, so that careful planning of sales, of production, of purchasing, of expenses, became common, and financial requirements could be predetermined with remarkable accuracy. Attention to personnel problems, stimulated by war-time activities, became general, with the result that men were more carefully selected, more adequately trained for managerial responsibility, and provided with more direct and effective incentives.

The resulting increase in efficient management soon made itself felt in many ways. It made possible considerably increased production at lowered cost. In connection with greatly improved transportation it made possible a much higher turnover of capital, especially working capital. Competition became more effective and consequently more severe, so that business entered into a period of "selective prosperity," in which the very strong and well-managed companies made large profits and the weaker ones found the going very hard. The low-cost manufacturer, or the one who possessed a specialty, and the retailer, who could buy at preferential prices or was in a position to render special services, enjoyed the lion's share of the profits.

The struggle which had been going on for years for control of the consumer market became much more intense, with the manufacturers, the large-scale retailers, and the wholesale-retail contingent each spending large sums in various forms of publicity to influence the consumer in their favor. With the new methods in management it was found that much larger business units could be managed with equal efficiency, and could afford a higher quality of managerial ability without a corresponding increase in expense. Also, increased size meant improved credit, greater possibilities in securing publicity, and in many cases improved purchasing power, in addition to other economies of large-scale operation. These facts led to a marked tendency toward an increase in the size of the business unit. Individual businesses made greater efforts to secure volume, and the movement toward consolidation took on a new impetus. This movement is too familiar a phenomenon to require comment. Chain stores expanded and took over other chains. Large groups of department stores were brought under common ownership. Every industry had its mergers, most of them involving new financing. The greatly increased size of business units and the large amount of capital involved tended to bring about a greater degree of separation between management and ownership.

All of these developments have had their effects, either directly or indirectly, on the financial history of the country since 1921. It is difficult to discuss these effects in any definite order, but one which seems to suggest itself first is the change which took place in the source of funds employed by

companies in their current operations. We have noted that during the period of adjustment many companies borrowed very heavily from commercial banks and through the sale of their paper on the open market. After taking inventory losses incident to deflation many of these companies found themselves in an unfavorable position with respect to working capital, and took the first opportunity to secure additional working capital through the sale of securities. These were sometimes short-time notes, usually from three to five years, sometimes bonds of longer maturity and sometimes preferred stock. As has been pointed out, all of these securities were at high rates of return, and were callable at a considerable premium, if at all. Having secured more or less adequate working capital through relatively long-term financing, these businesses set to work to avoid any repetition of their recent financial difficulties. Because of more scientific planning, and the great improvement which took place in the service rendered by the railroads, the average business was able to operate with inventories much smaller in proportion to its volume of business than formerly. Also, boards of directors had learned a lesson in conservatism, and were careful not to pay dividends in such amount as would threaten the working capital of the business. By 1925 a great many of the companies who had borrowed heavily from the banks or on the open market were in a position to be practically independent of such sources of credit. The resulting reduction in the amount of commercial loans set free large amounts of funds for the purchase of high-grade securities, for call loans to brokers, and for collateral loans to individual investors.

At the same time the new revolution in business had increased the productivity of the individual and had given him greater purchasing power, so that a large number of additional small investors had come into the market. The result of these factors was a market which would absorb a vast amount of securities at increasingly high prices. Many corporations which had not previously funded their current liabilities and provided themselves with ample working capital now proceeded to do so by means of long-time obligations or stock issues. A large number of companies took the opportunity to strengthen and solidify their financial position, and to improve their financial structure. The flotation of securities was dangerously easy, and it has since appeared that some of the issues did not represent sound investments. At any rate, with the downward turn of the business cycle and the accompanying debacle in the securities market, this phase passed into history. Like every other phase of history, it left certain legacies, and these condition the problems which face the financial executives of the present with regard to long-term financing. Some of the tendencies which appear are:

1. A greatly increased interest on the part of the investing public in common stocks as compared with securities with a fixed yield. This interest extends to any device which promises an opportunity to share in profits, such as convertibility and participating features, options, warrants, and the like, on senior securities.

2. A change in the methods of corporation financing. Many corporations have substituted common and preferred stocks for fixed obligations. This

has been done not only by means of public issues but also by retaining cash and declaring stock dividends, and by the issue of rights to stockholders. Such corporations have greatly strengthened their financial position and many of them have become large investors.

3. Greatly increased emphasis on distribution and marketability of securities. Both the investor and the issuing corporation have come to place more importance on a wide distribution, listing, and a ready market.

4. An increase in the number and importance of investing institutions and institutional investors.

5. The development of "department store" banking, especially the establishment of investment banking institutions in connection with large commercial banks.

Present Institutional Structure. The financial executive, when he has occasion to go to the market for capital, finds a number of different types of institutions performing their own special functions in the capital market. These institutions may be listed as follows:

1. The investment banker.
2. Brokers and stock exchanges.
3. Investing institutions.
 - a. Savings bank.
 - b. Investment trust.
 - c. Savings department in commercial bank.
 - d. Trust company.
 - e. Mortgage bank.
4. Institutional investors.
 - a. Life insurance company.
 - b. Corporation.
 - c. Commercial bank.
 - d. Eleemosynary institution.

Naturally, the corporation's only direct contact with the capital market is made through the investment banker who underwrites its security offering. This investment banker and his associates make it their business to pass on the securities to the investors, institutional as well as individual. Once the securities have been issued, the broker and the stock exchanges furnish a market, thus making them marketable from the viewpoint of the investor.

Functions of the Investment Banker. Investment bankers are security middlemen. On the one hand, they gather the funds of the community either directly from investors or through intermediate institutions. On the other hand, they establish contact with those in need of such capital, and direct its flow into the most promising channels. It is through these middlemen that the bulk of the new capital raised in the American market is secured. Investment bankers may be classed as wholesalers, retailers, and dealers (small retailers). Most of the larger investment houses are at present a combination of wholesaler and retailer. They buy, alone or with associates, entire issues of securities and sell them both at wholesale (through other retailers and dealers) and at retail (direct to investors). The list of investment bankers has been swelled in the past few years through the formation of securities subsidiaries by practically all of the large city banks.

The investment banker has a responsibility on one hand to the issuing company to devise the soundest and safest way of securing the required capital. He has an equally strong responsibility on the other hand to his investing clientele to protect them against unsound investments. If the securities issued are not to be listed, the investment banker and his associates constitute the only market in which the investor can liquidate his holdings. And even if they are listed, it is his responsibility to maintain a market on the securities, until they have become somewhat seasoned, and to exercise a continual sponsorship as long as the securities are outstanding. To make such sponsorship effective, it is necessary for the banking house to maintain a close relationship with the issuing corporation. This usually takes the form of representation on the board of directors. Such representation is practically universal in case of stock issues, usual in connection with long-term bonds or debentures, and less frequent in case of short-term notes.

It is not to be understood by this that the investment banker considers it any part of his duty to dictate the policy of the company. His object is only to make sure that no action is taken by the company which will needlessly weaken the position of the security holders.

Unless the demand for a given security by investors is spontaneously strong and active, the investment banker will have occasion to do a great deal of selling in order to maintain a healthy market for it. For this reason it is wise for the issuing corporation to choose a banking house whose organization for distributing securities is thoroughly adequate. Some of the most powerful investment banking houses depend for the most part on their wholesale distribution, and this is quite adequate where the securities in question are of a very large and favorably known company. In marketing the securities of a less known company, however, where it is necessary to inform the investors concerning the soundness of the company and its securities, it is advantageous for the investment banking house to have a strong retailing organization of its own.

Corporate Capitalization. In the current chapter no attempt is made to include a discussion of the financing or capital structure of utilities. This is a highly specialized field, and certain special considerations prevail which do not apply with the same force to industrial corporations. For this reason, the discussion here is confined to industrials.

In the recent refinancing by such companies, as well as in new financing, and in the financial set-up of consolidations recently effected, there is apparent a strong tendency toward simplification of the capital structure and toward the elimination or avoidance of heavy interest charges and dividend requirements. This is in line with the policy of conserving surplus and building up the stockholders' equity. It is, of course, inevitable that in corporate financing at any given time the form of security issued will be conditioned by the form of security temporarily in demand. Thus in 1927 and early 1928, a tremendous volume of refinancing was done by means of low-rate bonds, debentures, and serial notes. At the same time, there was a continually increasing demand by investors for common stocks and for preferred with special features providing for a possible share in profits. In the typical merger effected during this period and up to the time of the break in the

securities market, preferred stock was issued in part payment of the assets taken over, where in previous years bonds would have been used, and the greater part of such payments were made in common stock. Several such mergers were effected by the use of common stock alone. Common stock issued during the post-war period has been almost entirely of no par value. A "stated" value is ordinarily assigned to this common stock, and whatever asset value is received in excess of the stated value is shown in a capital surplus account. A number of large corporations also took advantage of the demand for stocks to substitute junior securities for funded debt and in many cases to retire preferred stock in favor of common with the result that, in the ensuing period of reduced profits, they found themselves in a very comfortable position financially, not being embarrassed by heavy fixed charges.

The tendency to make use of no-par stock and thereby add flexibility to the capital structure has also led to the use of "A" common stock of no par value to fill the place formerly occupied by par value preferred stock. This is discussed in a later paragraph.

Treatment of Intangibles Purchased. It has come to be quite generally recognized that there is no particular point to be gained by carrying more than a nominal valuation in the balance sheet for intangible assets, such as goodwill, trade-marks, water power rights, patents, and the like. Ratios computed by either commercial or investment bankers, for the purpose of rating the soundness of a company's position or for estimating what securities can conservatively be issued, invariably consider only the company's tangible assets. The psychological effect of a published statement is generally conceded to be better if intangibles are given only a nominal value. In recent mergers where companies taken over have received payment in cash and/or securities exceeding in value the value of their net tangible assets, the resulting valuation placed on the intangibles has usually been written off against capital surplus account, also known as contributed surplus. This account is created originally by placing a stated value on the no-par common stock and crediting capital surplus with the amount by which the total value of assets received for such stock exceeds the stated value. This practice with respect to intangibles results in a net worth figure on the balance sheet reflecting only the net tangible assets.

Securing Capital from Earnings. During the past five years or so, and up to the slump of 1929-1930, most of our large corporations showed excellent earnings. Many of them increased their cash dividends, but an examination of the balance sheets of such companies at the present time shows that for the most part a very conservative policy has been followed in the distribution of profits. Large reserves for contingencies have been built up, and earned surpluses have been accumulated to large amounts. One device that has been extensively employed by corporations with large surpluses and good earnings is that of supplementing the regular cash dividend on common stock with special stock dividends from time to time. This has the effect of ploughing earnings back into the business by reducing the surplus account and increasing the number of shares of common stock outstanding. It enables stockholders to turn a portion of their equity into cash through the

sale of the stock if they so desire. It does, of course, increase the number of shares upon which the regular cash dividend is to be paid, but there is always the possibility of cutting the regular dividend whenever any special need for conservation is apparent.

Financing from earnings has always been one of the recognized methods of securing capital, and the accumulation of capital through corporate saving has assumed considerable importance recently. The effects of this policy are evident in the strong financial position shown by the balance sheets of most of our large corporations after a year of reduced earnings.

Purposes of Long-term Financing. The purposes for which long-time financing is undertaken fall for the most part into six groups. They are:

1. To secure needed working capital.
2. To refund long-term obligations at maturity.
3. To refinance high-rate issues with low-rate financing.
4. To secure additional capital for permanent improvements and internal expansion.
5. To secure funds for the purchase of competing or complementary business establishments—consolidation.
6. To withdraw capital from the business, in order to diversify investment or to create a wider market for the company's stock.

Long-time Financing for Working Capital. Long-time financing to secure working capital might normally be expected to be undertaken only in exceptional cases, but it was common enough in 1921 and for a year or two afterward. A shortage of working capital, cramping the operations of a business and injuring its credit, may result from any of three causes: (1) losses incurred by the business; (2) conversion of working into fixed capital; (3) a too liberal payment of cash dividends on the company's stock. The period of deflation and readjustment forced most companies to take heavy inventory losses, thereby impairing their working capital. This condition made it very difficult for such companies to secure funds through commercial bankers or commercial paper houses, on account of their unfavorable current ratios. The needed working capital was secured, therefore, by issues of bonds, notes, or preferred stock, and those companies which did such financing as an emergency measure were forced to do it on a very costly basis. Later, after the most severe phase of the adjustment period had passed, other companies who had been able to secure needed funds through banks and commercial paper houses took the opportunity to sell securities to retire such loans and provide themselves with a safe amount of working capital. By 1924 or 1925 the greater part of such financing had been completed.

It sometimes occurs that a well-managed business has occasion to increase its investment in plant, and pays for such increase out of its current funds, thereby depleting working capital to a point lower than is desirable, so that long-time financing is necessary. In the last analysis, of course, such financing is really for the purchase of long-time assets, although directly it is to replenish working capital.

Refinancing. The refunding of high-rate issues with long-time low-rate financing was a very common practice from 1925 to 1929. It resulted very naturally from the very strong market for corporate securities which devel-

oped during that period, and such issues included rails, utilities, and municipals, as well as the general run of industrials. Securities were marketed at prices which not only reduced the interest rates of the post-war emergency financing but also enabled corporations to retire many of their securities issued prior to that time, even at fairly high call rates, with a distinct saving. 7 and 8 per cent preferreds were called at 110 and 115 and replaced by 5 per cent debentures. Three- and five-year notes were refunded with twenty- to fifty-year bonds, by ten- to twenty-year serial notes, and by preferred stock issues. Thus one great industrial sold \$30,000,000 of First Mortgage 4½ per cent Bonds, with a fifty-year maturity, priced at 95 to yield 4.76. Part of the proceeds of this issue was used to retire \$12,000,000 of 5½ per cent debentures issued in 1925 at 98½, and callable at 103½, as well as \$10,000,000 of cumulative preferred stock, sold in 1923 at 104½, and callable at 115. It was stated in the circular that the annual interest charges on the entire issue of bonds would be less than the interest and dividend requirements on the securities retired. Another big industrial refinanced \$64,500,000 of outstanding securities, including four different issues, through an issue of \$75,000,000 First Mortgage Sinking Fund 5 per cent bonds, sold at 101 to yield 4.95. Three of the issues retired bore 6 per cent coupons, and the other 5½ per cent. Here also the total interest requirements on the new issue of \$75,000,000 were less than the interest requirements on the \$64,500,000 retired.

As the demand for common stocks increased, in 1928 and 1929, a number of companies sold additional common stock, and employed the proceeds to retire bonds, debentures, notes, and preferred stocks. A considerable part of the aggregate of such stock issues was absorbed by the stockholders in the exercise of the rights which they received to purchase the new stock at a price below the offering.

Financing for Improvements and Expansion. It is obvious that any one piece of financing may have more than one purpose and usually does. Also, in attempting to trace trends in financing, it is often difficult to classify issues according to their purpose. When refinancing is contemplated, it is usually so stated in the circular. The same is true of the acquisition of one or more additional companies, or of a stock interest. But the phrase "and for other corporate purposes" may mean an addition to working capital, an investment in additional fixed assets, or some less usual purpose.

It is hard to form any estimate of the relative importance which addition to permanent capital assumed in industrial financing from 1922 to 1929. There is no question that it assumed an important place in the financing of railroads and of public utilities, though it is very doubtful if even here it ranks with refinancing. There are certain factors, however, which have tended to keep down the amount of financing for this purpose by industrials. For one thing, it is to be remembered that during the war and immediately following there was a great increase in plant facilities, so that after the period of readjustment a number of industries were suffering from overcapacity. Most of them still are. Another point to be noted is that companies which have had good earnings in the past few years have been keeping a large proportion of such earnings in the business, and have financed additions to capital

assets in this way. There have been a number of issue which assigned the erection of new plants as their primary purpose, but they have not been important in number or amount when considered as a part of the whole.

In connection with the matter of financing for internal expansion, it is interesting to note that there have been a few cases in which companies have done long-time financing for the purpose of building up and extending their systems of distribution. In one notable case this took the form of a gigantic advertising campaign. Such financing could not very well be done by means of bonds, since the asset acquired, if it can legitimately be capitalized, is certainly not a tangible one. It would be a natural reaction to expect a stock issue for this purpose, so that there might be no definite charge against earnings. In this case, however, the company's credit was so good and the market so strong that the financing was done by means of debentures with a $5\frac{1}{2}$ per cent coupon. As the bitter struggle for control of the consumer market continues, and as advertising media continue to multiply, it will not be surprising if we see further financing for this purpose. In fact, there is little doubt that this has been covered by the phrase other corporate purposes in more than one instance.

With regard to the class of securities desirable for the purpose of financing additions to long-time assets, this is conditioned to some extent by the nature of the demand for securities at the time the capital is required. It also depends on the existing capital structure and funded debt of the issuing company, and the amount and dependability of the company's net income. In some cases where the amount required is such that it can be obtained in a local market, the state laws with respect to personal property or other taxes may influence the form of the issue. As a matter of practice, the form of securities to be issued is something that can best be decided in consultation with the investment banker at the time it is desired to secure the capital.

Consolidations and Mergers. Financing for the purpose of effecting consolidations usually involves also the withdrawal of investment by some of the former owners, since family-owned businesses are sold to consolidations quite as often as to the investing public. In any given case, however, the primary purpose is easily determinable, and the two may well be discussed separately.

Disregarding the underlying economic causes for consolidations and mergers, it is sufficient for the present discussion to note that they have been very numerous in recent years, and that interest in such combinations was not ended by the collapse of the securities market. Several important mergers have been effected during 1930 through the exchange of stock for the assets of the company taken over. A revival in business and in the securities market will very probably lead to other large consolidations. Even in times of depression, the investment banker is offered opportunities to play his part in such combinations, regardless of whether the market permits any public offering of securities, and it is his task to weigh the merits and demerits of such plans. He must, therefore, be cognizant of conditions in a variety of industries, and of the changing factors which influence these conditions. He must know who are really able and farsighted men in an industry, and be ready to cooperate with them in any practicable fashion.

Mergers are sometimes brought about entirely or in the main through the exchange of securities among the stockholders of the business units involved, in which case there is little or no financing involved. More frequently, however, they involve the purchase, either outright or stock control, of certain companies by others. The company acquiring the other sometimes has sufficient available funds without additional financing. Where this is not the case, it may be possible and desirable for this company to secure all the funds required through an issue of bonds or debentures. In a large number of cases, however, financing for this purpose is accomplished at least in part through the use of stock. This may be preferred stock, par or no par, made attractive by a bonus of common, a warrant for the purchase of common, or by a convertible feature; or the financing may be done by a sale of *A* and *B* stock, usually of no-par, and sold separately or in combined units. In this case the *A* is usually preferred as to dividends, and may also be convertible into *B*, or even participating. Or in rare cases, the financing may be accomplished through the sale of common stock only. Thus there are a number of variations possible on the extent to which the public is invited to share in the risks of the new undertaking, as well as on the extent to which they may share in the potential profits.

When the securities market of 1928 to 1929 was at its height there were certain industries especially, in which profits had been large, and in which most of the earlier combinations had proved successful. The public was so eager to purchase the common stock or other securities bearing bonuses, warrants or rights to buy common, or convertible into common, in connection with new combinations in such industries, that there was occasion for the investment banker to be continually on guard against their over-optimism, as well as his own. That he was not always successful in this became only too evident later. Naturally, the depressed prices of such securities in 1930 is not a fair criterion of the soundness with which issues were priced, and some time must still elapse before this can be finally judged. It is clear enough, however, that competitive bidding for many such deals by investment banking houses resulted in the issue of securities at prices which were even then very hard to justify on any economic basis.

It is desirable for the business executive to remember, in negotiating for public financing, and in determining the price at which the company's stock is to be offered, that if it later becomes evident that the price at which the securities were sold to the public was unjustifiably high, it means not only a loss to the investors and a severe blow to their confidence in the underwriting house, but also a loss in prestige and goodwill on the part of the issuing company.

Financing to Diversify the Owner's Investment. The sixth purpose mentioned for which financing may be done is that of withdrawing funds from the business. Financing of this type constitutes one of the most important and interesting classes, both to the investment banker and to the investing public, and has assumed so much greater importance in the past few years that it deserves a very prominent place in any discussion of recent trends in financing. This is in general the process by which the public is today becoming a partner in a number of businesses which were formerly

closely held, and whose financial affairs were in most cases a complete secret to the public.

The typical situation which gives rise to this type of financing is one in which one man or a comparatively small group have built up a business without taking in any partnership capital outside of the limited group, until the business has come to have a high potential market value, either through continual reinvestment of earnings in the business, through an excellent earning record, or for both these reasons. In many such cases the business has a value, as reflected in its earning record, considerably greater than that reflected in the book value of its stock. Where such a situation exists, certain contingencies may arise which make it desirable for the members of the owning group to withdraw part of their capital, substituting for it funds furnished by the investing public.

One consideration which may influence the owners to this end is that the company has grown to such a size and the fortune which each of them has tied up in it has become so large that the stockholders feel it desirable to be able to diversify their investments to a greater extent than they have been able to do through the investment of their dividends. In fact, it is sometimes true that the expansion of the business has been so rapid that the cash dividends paid have been little in excess of the current requirements of the stockholders. If they can withdraw a part of their capital and at the same time create a market for the company's stock, they are not only in a position to diversify their investments by the reinvestment of the funds which they withdraw, but their remaining holdings in the company have gained appreciably in market value.

Importance of Marketability. This single point of marketability may very easily be the determining consideration in deciding to offer a portion of the company's stock to the public through an investment banker, as it is practically always one of considerable importance, even when incidental to the primary object of the financing. Thus the single owner or small group may have plenty of investments outside their own business but may at the same time feel that it would be desirable to market a small part of their stock holdings in order to establish for the remaining stock a market value commensurate with its earning power. Many companies have adopted the policy of encouraging their more responsible employees to purchase stock of the company, and in many cases this encouragement amounts to compulsion. This practice is very likely to help the morale of the employee, by making his interest to that extent identical with that of the company. It is, however, distinctly unfair if the only market for such stock is to be found among the present group of stockholders. The practice which prevails in most such cases, of paying a stockholding employee who is leaving the company the book value of his stock, usually deprives him of a considerable portion of the value of the stock, which value he has presumably helped to create. While we are considering the subject of marketability, it should be remembered that many closely owned corporations are so capitalized that each share of their common stock has a very high book value, and assuming the business to be successful, an even higher potential market value. Retiring this old stock, and issuing a much larger number of shares, which in most

cases would be without par value, takes the stock out of the class of "rich men's stocks" and makes it more available to the great body of investors.

Other Considerations Affecting Withdrawal of Owner's Investment. Sometimes, also, as one or more of the men who have built up the business and are its owners reach the age when they are thinking of retirement from active business and of putting their affairs in order against future contingencies, they are more easily led to realize that a public interest in the company, with a well-established market for its stock and with a strong investment banking house of national scope represented on its board of directors, will go a long way toward the continuity of the business and toward making its stock a desirable investment for their heirs.

It sometimes happens that a man has built up a business to the point where it represents a large estate, and wishes to retire from active participation, or even from taking any part in the management. Assuming that an entirely competent management has been developed, it is of course possible for him to do so. But men who have the ability to manage such a business successfully are also ambitious enough to be anxious for control. If the retiring owner or owners are willing to relinquish control in return for an amount of money representing the fair capitalized earning power of their holdings, the active management may call on the investment banker to work out a plan of financing which will secure the necessary funds from the public and still place the control in the hands of the managing group.

One contingency which often leads to the sale of an interest to the public is that of the death of the controlling stockholder in a closely held business. In such a case the active management remaining in the business will wish to secure control, for the reasons which have just been mentioned. There is also the additional reason that it is often embarrassing to the management to have control held by an estate. The writer recalls at least one case with which he was brought into close contact in which a highly able and successful management was so harassed by the combination of a credulous widow and an unscrupulous group of trustees that its members finally withdrew from the business. There is no intent to imply, of course, that such an extreme case is to be considered typical. It is fairly obvious, however, that it is more favorable to the management to have stock control either in its own group or divided between that group and a number of individual investors represented by a friendly banker.

Even though the deceased stockholder may not hold a controlling interest, there may still be considerations arising out of his death which will make some sort of public financing desirable. The estate may need to raise money to pay the inheritance tax. Also, the stock of the company may not be considered a suitable investment for the heirs, on account of its limited marketability, or because an inactive group of minority stockholders in a closely owned corporation cannot always be sure that the active majority is to be depended on to protect the interests of such minority.

Another consideration which may influence the owners of a closely held corporation in deciding to offer stock to the public is the trade advantages which may arise out of such an offering. Some of our great public utilities have long since realized the importance of attaching the goodwill of the public

and have carried on extensive campaigns for customer ownership. Manufacturing companies whose products are nationally distributed and nationally advertised may well find that to have their stock marketed nationally through a strong and favorably known investment banking house gives them added publicity of a favorable type. The same consideration applies to chain stores and mail order houses whose operations cover a wide territory. In these days when so much hinges on consumer goodwill, many business managers have come to attach considerable importance to favorable financial publicity, both through the distribution of the company's securities and of its commercial paper. A broadened interest in a company's securities is very likely to carry with it a broadened interest in its product, and such companies as are prepared to have the "searchlight of pitiless publicity" turned on them may well profit by the attention which they thus attract.

Methods Employed in Financing Withdrawals. Public financing for the purpose of withdrawing owner's investment may give rise to a variety of security issues. Where the withdrawal of funds is the primary object, and there is no desire to create a market for the company's stock, it may be accomplished through the use of bonds, debentures, or straight preferred stock, par or no par, provided the company's asset position and earnings record are such as to make the particular kind of issue in question a feasible one. Where the plan involves the creation and maintaining of a public market for the company's stock, however, its execution necessarily involves the issue of a sufficient amount of common stock to permit of public trading in it on one or more of the recognized exchanges. In any given situation this common stock will be placed on the market in whatever manner seems best adapted to the peculiar situation of the issuing company, and the trend of the current demand exercised by investors. In recent years such common stock is almost always of no par value, and the number of shares into which ownership is divided is such as to give each share a fairly low market value, on the theory that, other things being equal, there will be more general trading in a low-priced stock than in a high-priced one.

There is, of course, a variety of ways in which common stock may be issued, regardless of the purpose for which it is issued. It may be given as a bonus with bonds, notes, or preferred stock, thereby making such securities more attractive and improving the price at which they can be sold. Besides such a bonus, warrants entitling the holder to purchase a given number of shares of common at a certain price within a specified period may be given with the senior securities, or warrants may be attached and no bonus given. The issue of such stock warrants naturally requires holding in the treasury an amount of common sufficient to redeem them. A bonus of common may take the form of regular certificates issued along with the other securities involved, or it may take the form of a provision that so many shares of common will be issued whenever the first dividend on the common is declared. Another device employed to secure a greater price for the senior securities and to aid in getting common stock on the market is to make such securities convertible into common at a specified ratio, and within a time limit set. This again requires holding common stock in the treasury.

In case of stock warrants and convertibility features, it is quite usual to set the purchase price or the basis of convertibility at one figure up to a certain date, after which it changes to a basis more favorable to the common stock, to continue until another date set, and so on.

Another variation of the bonus plan is to sell units consisting of one unit of the senior security (bond, note, or share of preferred) and a certain number of shares of common, at a price which allots a certain value to the common. This has the merit of attributing somewhat more importance to the common stock than is the case where it is offered as a straight bonus.

A plan of financing which has come into quite general use in the past few years in cases where common stock is to be placed on the market is that of issuing two classes of stock, usually known as A and B stocks. Both these stocks are typically of no par value. The A stock will, as a rule, represent a fairly respectable equity in the tangible assets of the company, and will be preferred as to dividends for a certain amount per share per annum, these dividends being cumulative in most cases. Usually, also, it will be callable at a given amount per share, and preferred as to assets to a certain amount in case of liquidation. Such a stock may thus be in effect a no par preferred, although it will not in every case carry all the features mentioned. Usually the preferred dividend per share and the call price will give such stock a price per unit considerably less than \$100, the usual par of preferred stocks. The B stock does not as a rule have very much of an equity in the tangible assets of the company but is likely to approximate, at least roughly, the amount by which a valuation of the company based on its earning power exceeds the amount of its net tangible assets. It is, in other words, stock issued against the goodwill of the company. The value of such stock, at the time of its issue, is purely speculative, since it is not expected to pay dividends immediately, and its ultimate prospect of paying dividends depends on the future success of the business. It is fairly evident, however, that when the company has demonstrated its ability to earn a fair return on this B stock, and the stock itself has been on the market, sponsored by a strong investment banking house or syndicate, long enough to become "seasoned," the market value of the corporation's entire capital stock is likely to be considerably greater than it would have been with the same earning power while the stock remained closely held.

In the case of a corporation whose earning power has been well established it is of course possible to sell common stock alone, or if other securities are offered in the same piece of financing, to sell it independently of such other securities. So in the case of a B stock, such stock may be offered to the public quite independently of the A. More often, however, the offering is made in some sort of combination, such as those already mentioned. It may be given as a bonus on the A, with or without additional stock warrants, or it may be offered combined with the A stock into units, the B stock being detachable immediately, at a definite future date, or upon the occurrence of some stated contingency, such as the closing of the underwriting syndicate or the payment of the first dividend on the B stock. Also, when A and B stocks are issued, it is quite usual to enhance the attractiveness of the com-

bined offering by making the A stock convertible into the B, either share for share, or on some other logical basis.

Stock with No Par Value. In discussing the use of common stocks as employed in various types of financing we have assumed a general acceptance of no-par stock, and have not elected to treat it as a recent trend in financing. Its use is too well established and too familiar to all of us to require any particular discussion. It affords greater flexibility in effecting desirable readjustments in capital structures than did the old par-value stock, and obviates the necessity for the many elaborate fictions which appeared on the balance sheets and prospectuses in the good old days when the latter was in general use. It is true that one of our eminent economists recently attacked its use vigorously, making the assertion that it opened the way to many new iniquities in financing. But it is also true that in the very deals against which this gentleman fulminates, no attempt was made to conceal the facts, and he admits as much himself. Common stock, and for that matter other securities as well, depend for their value on a satisfactory trend of earnings, and this fact is clearly recognized by both bankers and investors. In cases where common stock financing works out to the disadvantage of the investors, it is simply because the bankers are honestly mistaken in their estimate of the future trend of earnings, and not because the use of no par value stock has enabled them to work any hocus-pocus on the investing public. The percentage of such cases is no higher today than it was before such stocks were employed, and the facts are set forth in much more frank and understandable fashion now than they formerly were.

Trends in Investor Demand. The foregoing discussion of methods by which common stocks may be placed in the hands of the public very readily suggests a definite trend in the market for investment securities. The trend in question has to do with the nature of the demand exercised by the investing public. The past few years have been years of real prosperity, in which nearly all of the strong and ably managed industries in this country have had good earning records. Individuals in general have had higher earnings purchasing power has increased and the standard of living has advanced. These factors have affected the attitude of investors in at least two respects. The first is that they have gained faith in the stability of management and of earning power in our large and well-known industries, and have come to feel that the preferred stock, or even the common stock of such an industry may be just as much an investment as a bond or debenture. Indeed, when a group of bankers can make a successful offering of a 6 per cent preferred stock to the public at 105, this being also the call figure of the stock, it would seem to indicate that some preferred stocks are considered better investments than some bonds.

The second respect in which the attitude of the investor has been modified is to be found in his demand for investments which carry with them the opportunity for speculative profits. The standard of living has risen to a point which constitutes a painful problem even for men whose earnings are comparatively high. The investor realizes that the strong market for securities has resulted in beating down the rate of return on high-grade securities to a very low point. At the same time, however, he wants the

chance of some action for his money. This accounts for the readiness with which the public has purchased securities which carry with them bonuses of common stock, warrants for the purchase of such stock, or the privilege of conversion into common stock. It also accounts for the fact that the investor will pay a better price for a bond bearing a low coupon rate and sold at a discount than he will for one bearing a higher rate and sold at par or at a premium. They have become so accustomed to seeing bond issues called long before maturity that the purchase of a bond at a discount appeals to them as an opportunity for a speculative profit, even though it is only a small one.

Responsibilities of the Investment Banker. This new attitude on the part of the investing public naturally received a severe setback from the very drastic deflation of values which has occurred in the past year (1929-1930). It was pointed out at an earlier point in this discussion that during the boom period investment bankers often purchased issues at what appeared to be unreasonably high prices, in accordance with the public demand which then existed for such securities. Naturally, investors who purchased such securities have in the majority of cases suffered a serious depreciation in the value of their holdings, provided they continued to hold them. Only future developments will make it possible to determine if the original offering prices were really unreasonably high. Whenever it eventually appears that such original offerings were overpriced, the result must inevitably be loss of goodwill to the corporation, and loss of prestige to the investment banker. This is true in spite of the fact that the securities were sold at a price in line with investor demand, and that the banker honestly considered them a sound investment.

The investment banker has a clearly defined and well-recognized function as a guiding factor in national and international industry. It is his task to guide the capital accumulated by potential investors into those channels in which it will prove most productive. It has already been pointed out that he has a double responsibility, on one hand to the issuing corporation and on the other to the investor, and that his survival and continued prosperity depend on discharging these responsibilities honestly and wisely. A temporary decline in the general price level of securities, due to a cyclical falling off in business activity and profits, does not prove him a false prophet. His real mistakes, however, do not remain hidden, and the character of his house must inevitably be judged in the long run by the record of the securities which it has offered. The other side of the picture is that the public, having at any time formed fairly definite ideas of the better-known investment banking houses, tends to have its opinion of the soundness of the issuing corporation colored somewhat by its opinion of the underwriting banker or banking group. The strength and reputation for conservatism of the investment banker should, therefore, be an important consideration in the mind of the executive who contemplates placing the securities of his company on the market. The investment banker who can serve a corporation in public financing of national scope must not only be honest and farsighted but must be financially powerful, with ample capital and credit, with strong connections, and with an organization which can provide a far-reaching distribution

of the securities in question. Securities of the better grade are sold today on a very low margin of profit, and the investment banking houses which are in a strong position today are for the most part those whose size, organization, and prestige enable them to do a considerable amount of underwriting, thus realizing the underwriter's profit. This trend to larger business units in the investment banking business is simply in accordance with the trend of business in general.

Financial Problems of Smaller Companies. The discussion to this point has assumed corporations of large size and with established earning records, whose securities may be expected to have a nationwide market. It should not be forgotten, however, that there are a large number of smaller corporations which enjoy excellent business opportunities, are ably managed, and have interesting futures. The farsighted investment banker is certainly not disposed either to despise or to neglect such companies. He is interested in becoming acquainted with the men who direct them, in keeping files of their statements, and in watching their progress from year to year. Such an investment banker is always glad to consult with the financial executive of any such smaller company concerning either his immediate financial problems or his long-time financial policy. The corporation which has not yet reached the point at which its net worth and earnings entitle it to use the national market in securing capital is of course dependent on its local bankers. It is understood, of course, that there is no business enterprise, large or small, which does not find the goodwill and confidence of its local bankers highly desirable, but the smaller concern is much more limited as to the market in which it may secure its funds. It is a mistake for any such company to make a premature attempt to do its financing away from home. The first step in developing a national credit, after local credit has been firmly established, is to open accounts with one or more strong and well-known banks in the great financial centers. The next step, in case the company has fairly sizable current borrowing requirements, may well be the sale of its commercial paper through some strong house which can give it a wide distribution. The establishment of the company's name as an acceptable credit risk among the bankers of the country is in itself a very valuable form of credit advertising. But whether the company has occasion to use the open market or not, it is a valuable thing for the financial manager to become well acquainted with the members of some strong investment banking organization, to keep them apprised of his company's progress, and to seek their advice on the broader aspects of his financial policy. He need have no fear that the investment banker will consider this a waste of his time. Such bankers are always interested in able management, wherever they may find it, since this is the most important single factor affecting the soundness of the securities which they offer their customers, and they know where there is able and ambitious management there is always a strong probability that the business will eventually become eligible for national financing.

Conclusion. In the foregoing chapter no attempt has been made to define procedures to be followed by the financial executives in prescribed cases. Other things being equal, any one of a number of variables may conceivably make an important difference in the type of financing that is desirable, the

kind of securities to be offered, the terms of the contract, or even the time when the financing is to be undertaken. Any piece of long-time financing that is attempted must be carefully designed by experts, with full consideration of all the factors that enter into the situation *at the time*. For this reason the writer has confined himself to a consideration of certain tendencies which have been apparent in the long-time financing of the postwar period. It is safe to say that every piece of financing undertaken at any time represents a carefully drawn plan designed to secure the required capital on terms which will be as favorable as possible to the issuing corporation in view of the existing market for corporate securities. And the experienced investment banker is typically the best judge of the receptivity of the market for a particular type of security at a given time. Under the present organization of our economic system, fluctuations occur in the level of earnings, for business in general, as well as for particular industries, and for this as well as for other reasons, the demand for corporate securities changes from time to time, not only in total amount, but also in the direction which it takes. Rails, utilities, industrials, banks, investment trusts—each group has its periods of investor popularity and its corresponding periods of disfavor. The same is true of the form of security issued. Bonds, debentures, serial notes, preferred stocks and common stocks, with all their variations, come and go in popularity with the investor. This continual shifting in the nature of the market for capital makes it highly desirable that the typical company should be capitalized and financed in such a conservative fashion that its executives can choose their own time to enter this market through an offering of its securities.

CHAPTER VI

SHORT-TERM BORROWING

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The capital required to meet the needs of any business enterprise may be provided through the sale of securities, it may be taken from the profits which have arisen out of the pursuit of the business, or it may be secured through short-term borrowing. At the time the enterprise is launched sufficient capital should be provided through the sale of stocks and bonds to cover not only such fixed requirements as land, buildings, and equipment but to meet the ordinary working needs of the business, such as the purchase of raw materials, labor, heat, and light. Permanent working capital should be provided through permanent financing.

As the business grows additional capital requirements can often be met out of the company's profits. If it is found, however, that these are not sufficient to cover an expanding volume of business which may require new buildings, land, and equipment and additional working capital, funds for such needs should be secured through the further sale of securities rather than through short-term borrowing.

Borrowing is advisable as a rule only for the purpose of meeting emergency or seasonal needs or of taking advantage of cash discounts. A more complete discussion of legitimate reasons for borrowing will be found in a succeeding paragraph.

Methods of Short-term Borrowing

Funds for short-term requirements may be secured in various ways. Among these, the following are methods commonly used by business and industrial concerns. A discussion of public utility and railroad borrowing is beyond the scope of this chapter.

1. Unsecured bank loans.
2. Sale of promissory notes on the open market.
3. Discounting trade and bankers' acceptances.
4. Loans secured by stock market collateral.
5. Commodity loans.
6. Assignment of receivables.
7. Installment financing.
8. Miscellaneous methods of short-term borrowing.

1. Unsecured Bank Loans. The most common method of short-term borrowing is through discounting the concern's promissory note or notes at one or more banks. These are unsecured time loans with a definite date

of maturity ranging from one month to one year although the maturity is usually from sixty to ninety days or four months. They are as a rule single-name paper, that is, they are the direct obligation of the company. These notes are occasionally though not as a rule endorsed or guaranteed by another party. If the firm's financial condition is sound and the character of its management is high this is the simplest and usually the most satisfactory method of covering short-term requirements.

Selection of the Bank. The selection of the bank is important. The size and financial strength of the bank must be considered. While the bank may be sound enough financially it may not be large enough to take care of all of the customer's requirements, in which case he must either select a larger bank or borrow from more than one bank.

It is usually desirable to select a bank which has specialized in or is familiar with the company's own line of business. Thus the bank will understand thoroughly all of the conditions surrounding the operation of the business and will therefore be better prepared to render service and to furnish funds when they are needed. The service which the bank is prepared to render ought to be investigated. Many banks have service departments which are able to give valuable advice on management problems of many kinds. As a financial adviser, the bank has often rendered outstanding assistance.

Two additional factors to be considered in choosing a bank are those of location and convenience. For the small company particularly, it is important to select a local bank. The local banks can render frequent advice, and can be relied upon to take a personal interest in the concern's welfare.

Information Required by the Bank. Before the bank is willing to discount a firm's promissory note it requires the company to present a complete financial statement and a profit and loss statement. Formerly, the usual test of financial soundness was that the company's ratio of current assets to current liabilities be in the proportion of two to one. The current ratio is unquestionably an important strength measurement in that it establishes the relation between debts maturing in the near future and the assets from which payment will be made. It is now customary, however, to supplement this with other ratios, such as: worth to debt, worth to fixed assets, merchandise to receivables, sales to receivables, sales to merchandise, sales to fixed assets, sales to net worth. While the current ratio is not in all instances the most important or controlling ratio, yet it always has a place of importance in the analysis of any financial statement. Theoretically, the banks desire that the current ratio be two to one, but in actual practice they may be willing to loan to a concern whose current ratio is as low as one and a half to one, or even less in some instances, dependent upon the circumstances. Many other questions covering the operation, management, and past profits of the business may be asked.¹ A complete audit of the company's business by a certified public accountant

¹ For a complete discussion of the information commonly required by banks, see E. E. Lincoln, "Applied Business Finance," pp. 383-392, McGraw-Hill Book Company, Inc., 1929; and Joseph M. Regan, "Financing a Business," pp. 143-159, LaSalle Extension University, 1921. For a thorough treatment of analytical technique in statement analysis, see A. Wall and R. W. Duning, "Ratio Analysis of Financial Statements," Harper & Brothers, 1928.

is required before the initial loan is made, and an annual audit thereafter. Semiannual or even quarterly statements of condition must also be furnished.

The Purpose of the Loan. The banker will sometimes wish, and is entitled, to know the purpose for which the proceeds of the loan are to be used. The bank will usually require that the loan be for short-term needs only. It is as a rule not to the bank's advantage to furnish, on short-term notes, funds for fixed capital requirements, such as land, buildings, and equipment. Bankers have upon occasions loaned funds on short-term notes for such permanent purposes. They have done so only when they have felt that the additions to property or plant would enable the concern to make increased profits through such expansion sufficient to repay the loan at its maturity. Too often, however, the bank has found itself compelled to make frequent renewals of such loans and it has become, therefore, in effect an investor in the enterprise rather than merely a short time creditor.

Theoretically, in the opinion of many writers, the loan ought to be self-liquidating if possible, that is, the transactions which the proceeds of the loan are to finance, ought to furnish before the loan matures the funds with which the promissory note is to be paid. The maturity of the loan ought to depend, therefore, theoretically upon the length of time which will be required for the specific transaction financed to be self-liquidating. In actual practice, however, the maturity of the loan is dependent upon the company's average rate of turnover rather than upon the length of time required for any specific transaction to be self-liquidating. The promissory notes which the company gives to its bank from time to time are related, therefore, to a number of transactions rather than to any specific transaction.

The Line of Credit. After estimating the short-term requirements of the company, the financial officer arranges for a line of credit at the bank. How extensive the line of credit can be depends upon the ratio of the company's current assets to current liabilities and other ratios, upon the annual turnover of stock, upon the terms of sale and purchase in the trade, upon the type of business, the commodities handled, the past and probable future profits of the company, and many other considerations. The line of credit indicates the maximum amount which the bank is willing to loan to the concern at any one time depending upon the credit rating and average bank balance maintained by the concern. As the company needs funds from time to time it negotiates loans to cover such needs; at other times the line of credit is unused and remains open only if the concern complies with the particular regulations of the bank with which it does business. Although it may be against the company's policy to borrow, it is good practice to keep bank lines open at all times, for if an emergency should arise, a loan may be arranged easily and at a favorable rate of interest to carry the concern until it may again be independent of outside funds.

As a basis of credit extension, the bank expects the borrowing concern to maintain on deposit with the bank an average balance equivalent to a certain percentage of the amount which has been borrowed. The usual deposit requirement is twenty per cent of the amount borrowed, although it ranges from ten to twenty-five per cent.¹

¹ For a discussion of the 20 per cent deposit requirement see E. E. Lincoln, "Applied Business Finance," pp. 406-409, McGraw-Hill Book Company, Inc., 1929.

Negotiating the Loan. The actual procedure in negotiating the loan is as follows: When the company finds that it will need a certain amount of funds for a short period of time, the financial officer of the company applies at the bank for a loan. If the concern's line of credit has been kept open as previously indicated, the bank agrees to extend a loan. The financial officer signs a short-term note for a specified amount. The bank then discounts this note by depositing to the credit of the concern an amount equivalent to the face value of the note minus the agreed upon rate of interest. This rate is dependent upon the prevailing open market rates, and upon the standing and credit rating of the borrowing company. Among the factors which affect the rate of interest are the following: the general state of business, that is, whether the country is passing through the stage of prosperity or depression within the business cycle; the time of year; the section of the country, for example, in the South, Middle West and Far West rates are higher; the duration of the loan; the nature of the risk; whether the borrower is an old customer of the bank of long standing or a new comer; and whether the concern is large or small. A large company is frequently granted preferential rates.

During the period of the loan the borrower is expected to keep on deposit an amount equivalent to a definite percentage of the total sum borrowed as previously mentioned. At maturity the note may be paid in full or if circumstances warrant or compel the bank may renew the loan. Renewals are often at a higher rate of interest, unless provision was made in the original contract that renewals of the loan be at the same rate.

The Periodic Clean-up of Loans. Theoretically, the banks expect their customers to make a periodic clean-up of loans, at least once annually. In actual practice few banks are strict in requiring customers to pay off all outstanding notes periodically. The banks are more strict with the small concern than with the large concern in regard to the annual clean-up of loans although they do not always insist that even the small concern make a periodic clean-up. The larger concerns usually find it easy to pay off notes due one bank by borrowing at another.

2. Sale of Promissory Notes on the Open Market. As an alternative to borrowing from the banks on unsecured promissory notes, larger and stronger business concerns often find it more convenient and less expensive to sell paper on the open market. The company's promissory notes are sold through the agency of commercial paper houses. These notes are, as a rule, unsecured and for the most part single name. They are occasionally endorsed or guaranteed by interested parties. The term given to such unsecured promissory notes is commercial paper. This is in the strictest meaning of the word in contradistinction to customers' loans made directly by the commercial banks. The notes are sometimes secured by collateral. Double-name trade paper is much less usual than single-name paper.

History of the Commercial Paper System. The commercial paper system in its present form dates back to the eighties. It had its greatest development during the years from 1907 to 1920, the latter being the peak year. From 1920 to 1929 the amount of commercial paper decreased until in September, 1929, the amount outstanding was less than one-fourth as great as in the same month of 1920. During 1930, there was a marked increase in the amount of

paper sold on the open market. In September, 1930, the amount outstanding was almost twice that in September, 1929. Commercial paper totaled \$513,000,000 in September, 1930, in contrast to \$265,000,000 in September, 1929, and \$1,064,000,000 in September, 1920.¹ There are at present in the United States about twenty-five representative dealers of whom not more than fourteen or fifteen are national in scope. The number of business houses selling paper on the open market is relatively small. In 1920, 4,395 companies used this method of short-term borrowing. The number had decreased to about 1,200 or 1,500 in 1928. Exact figures are lacking for 1930 although it is known that there was a definite increase in the number of firms offering their paper on the open market. This is in keeping with the increase in the total amount of commercial paper outstanding. According to the National Credit Office of New York City, the following are the prominent industries which used the open market in 1928, listed in the order of their importance based upon the number of concerns within the industry which employed open-market financing during that year: *textiles* (manufacturers of cotton, woolen, and worsted goods, hosiery manufacturers, manufacturers of men's wear and of work clothing, wholesalers of dry goods, department stores, factors); *food stuffs* (flour millers, meat packers, and wholesale grocers); *metals* (manufacturers and wholesalers of light and heavy hardware, and of light and heavy machines, manufacturers of stoves and ranges); *leather* (manufacturers of shoes, tanners of upper leather); *lumber* (manufacturers and retailer of furniture and of lumber); and *miscellaneous* (auto finance, wholesale and retail; wholesale drugs).

Prior to 1913 the commercial paper system tended to serve as the basis of the only open discount market in the United States. Since the founding of the Federal Reserve System the latter has become the chief agency for performing this service because of its facilities for rediscounting commercial paper.

Types of Concerns Using the Open Market. Only the larger and stronger concerns are able to borrow on the open market. Formerly the better commercial paper dealers would not sell paper for concerns whose net worth was less than \$300,000 or \$400,000; now the minimum net worth is about \$200,000. The majority of firms who use the open market have a net worth of \$500,000 or more. Certain types of concerns are unable to sell their paper on the open market. Dealers refuse to do business with the following types: new or little known concerns no matter how strong they may be financially; producers or distributors of "styled" lines, and luxuries, inasmuch as these are poor risks because of the rapid change in consumer preference; those concerns which sell on time, or whose merchandise turnover is slow; those companies manufacturing or distributing products which are subject to rapid price fluctuations or for which the demand cannot be estimated.

The procedure of selling paper on the open market is as follows: The financial officer of the concern selects a commercial paper house whose reputation and good standing is definitely known, preferably one of the fourteen or fifteen

¹ These figures are based upon commercial paper outstanding, maturing within seven months, as reported to the Federal Reserve Bank of New York by twenty-five dealers.

whose business is national in scope. He then makes application for a loan. The dealer makes an exhaustive examination into the condition of the applying concern. This includes a full and properly audited statement of condition. Liquidity of current assets is also important inasmuch as there is no personal element in the open market, and notes must be paid at maturity. A comparative record of earnings covering several years' time must be presented. The broker makes use of credit reporting agencies; he makes inquiry not only at the customer's bank or banks but at other banks in the community in which the concern is located; he also makes inquiries of the company's creditors and customers, as well as within the trade.¹ The character and ability of the management is a factor which is given important consideration. The loan must be for strictly commercial purposes and must ordinarily be self-liquidating.

In order to find a market for the paper at small banks as well as at large the loan is broken up into a number of promissory notes of varying denominations ranging from \$2,500, to \$10,000, the common amounts being from \$5,000 to \$10,000. The notes are as a rule made payable to the order of the borrowing concern, at a designated bank, signed by the borrower, and endorsed by him in blank. Usually the notes are signed by the duly appointed borrowing officer of the concern although they are occasionally endorsed by officers who are known to possess considerable personal property. If the concern needs the funds immediately, the commercial paper house buys the block of notes outright, in which case the borrower receives their discounted value, less the dealer's commission. The dealer's commission is one-fourth of 1 per cent irrespective of maturity. The rate of interest at which the paper is discounted is in this case that prevailing at the time in the open market. Most paper has a maturity of six months, although the range is from two to ten months.

If the concern is not in immediate need of the proceeds of the loan the dealer will arrange for the sale of the paper within a period of several weeks' time or even a month or so. When the notes are actually sold the customer will receive the proceeds of the loan discounted at the rate agreed upon by the broker and buyer or buyers, less the broker's commission. In case the broker buys the paper outright and there is a change in open market interest rate between the time the broker buys and sells the paper, the broker gains or loses accordingly. If he merely acts as the concern's agent he then receives his commission alone and there is no possibility of profit through a change in the interest rate.

The commercial paper house sends a notice of its offerings to its list of banks and other institutions which customarily buy paper on the open market. The house sends to the prospective purchasers a full and detailed description of the results of its own investigation of the borrowing concern, including a financial statement of condition and references of various kinds. The buying organization, usually a bank, is given a ten-day option during

¹ For an illustration of the type of confidential credit information requested by one of the large commercial paper houses, see E. F. Lincoln, "Applied Business Finance," pp. 432-434, McGraw-Hill Book Company, Inc., 1929.

which time it also makes a thorough investigation of the borrowing company through financial reporting agencies and other bankers as well as through the trade. If during this period the paper is found to be unsatisfactory the bank may return it to the commercial paper dealer and receive again the principal sum plus interest. Otherwise, it keeps the paper and presents it at maturity for payment at the designated place.

While the commercial paper dealer does not guarantee the notes which he offers for sale, yet his reputation is at stake and some of the better houses have been known to make good any losses incurred on commercial paper bought through them. The losses on commercial paper, however, are very small. According to studies conducted by the National Credit Office, in no single year from 1922 to 1925 was the loss to banks on commercial paper more than one-tenth of 1 per cent. In 1922 the loss was .00013, .00023 in 1923, .00105 in 1924, .00087 in 1925. The average rate of loss on bond investments of banks during the same four years was about seventeen times the rate of loss on commercial paper.

Advantages and Disadvantages of Borrowing on the Open Market. The open market has been found particularly useful by those large concerns whose own local banks have been unable to supply all of their credit needs, due to the fact that although the borrowing company may be legitimately entitled to additional funds the bank may be prevented by legal limitations and other reasons from loaning funds enough to cover the concerns' short-term requirements. When a large business is located in a small community frequently the local bank cannot supply sufficient funds. The concern may in this case find open market borrowing particularly convenient. It may of course have recourse to banks in large near-by cities but even so the open market has certain distinct advantages. The open market rate of interest is usually, though not always, lower than the rate which the concern would be required to pay at the banks. There is, too, a certain prestige which is attached to this method of financing. Only those concerns which are financially sound and of the highest character can pass the rigid credit examination given by both commercial paper houses and the purchasers of commercial paper. Through borrowing on the open market the firm is able to keep its local bank lines open for emergencies. As a matter of fact, however, it is essential that the concern which is borrowing on the open market maintain credit lines in its local banks sufficient to cover its open market borrowing. Inasmuch as notes sold on the open market must be paid at their maturity the openmarket borrower must maintain his banking connections so that, in case an unforeseen emergency should arise, he may borrow from his banks to pay his notes when they fall due, if he is unable to arrange for the sale of another block of notes on the open market. This means that, as in the case of bank borrowing, the concern ought to keep on deposit in its bank or banks as a safeguard balances equivalent to 20 per cent of the amount which is being borrowed on the open market.

There are, too, certain disadvantages to open market borrowing. The publicity which is attached to open market borrowing is not always pleasant in nature. The borrower must stand ready to answer all kinds of questions covering his business. The firms from which he buys, his competitors, his

own bank, and other banks are solicited for information relating to his credit standing and position within his trade. If the concern's paper is refused, untold injury results to its reputation and credit standing.¹

Despite the striking increase during 1930 in the amount of commercial paper sold on the open market following the stock market collapse in the autumn of 1929, many authorities believe that the commercial paper house will gradually disappear. If this proves to be true, it is to be regretted inasmuch as the commercial paper system has certain outstanding advantages for the country as a whole. It tends to secure a better distribution of the funds of the country and thus to equalize interest rates in different sections of the country. At present, rates in the Middle West, in the South, and in the Far West are considerably higher than in the East. The commercial paper system supplies the banks with outlets for their surplus funds and greater safety through increased liquidity of their portfolios. Not only are bank losses on commercial paper less than on bond investments but the rate of yield is also greater than on bonds. There is to be considered, too, the fact that the commercial paper system furnishes a sort of wholesome competition to the banking system, a factor which is not to be minimized. It is, therefore, to be hoped that the commercial paper system will not disappear as appeared probable in the years from 1920 to 1929.

3. The Trade Acceptance. Within certain industries the trade acceptance is used as a means of short-term financing. Among these are the following: fur, jewelry, electrical equipment, textile, raw silk trade (by members of the Raw Silk Trade Council), rubber tire manufacturing, agricultural implements, and lumber. The trade acceptance is used primarily by manufacturers, inasmuch as leading wholesalers have as a rule been opposed to it. It is generally used where terms are medium to long, and bills are of considerable size. Many business concerns use the trade acceptance as a collection instrument alone, that is, for slow-paying customers, while in some lines such as agricultural implements and lumber, and in the raw silk trade, it is used instead of the open account system for all customers who take net terms. In the rubber tire manufacturing industry it is used for shipments bearing the spring dating, in order to give to the seller a definite instrument as evidence of the transaction.

The trade acceptance has been defined as "a time draft drawn by the seller of merchandise on the buyer for the purchase price of the goods and accepted by the buyer, payable on a certain date, at a certain place designated on its face."

The customary procedure in connection with the use of the trade acceptance is as follows: When rendering an invoice for the purchase of merchandise, if the amount is reasonably large, the seller will accompany the invoice with a trade acceptance form filled out for the amount due, or if the buyer purchases several bills of small amounts during the month, the seller will accompany the monthly statement with a trade acceptance form filled out for the total amount due. The buyer has the option of either paying the bill, deducting

¹ For a discussion of the advantages and disadvantages of commercial paper to both the borrower and buyer, see R. G. Rodkey, "The Banking Process," pp. 141-153, The Macmillan Company, 1928.

the cash discount if such is allowed, or he may "accept" the trade acceptance by writing across its face the date and the words "accepted payable at . . ." (filling in the bank or designated place), signing it, and returning it to the seller.

The seller then either holds the acceptance in his portfolio until a short time before it is due, when he will forward it through his bank to the bank designated for acceptance or to the acceptor at his own place of business or other designated place; or if the seller finds himself in need of funds, instead of borrowing from his bank on his unsecured promissory note, he may discount a number of trade acceptances at his bank or sell them in the open market through brokers or commercial paper houses. He is then able to borrow upon capital which is at present tied up in open book accounts.

Legally, unless a different place is designated on its face, the place of payment of a trade acceptance is at the office of the acceptor, that is, the buyer of the goods.

*History of the Trade Acceptance.*¹ The trade acceptance was used considerably in this country before the civil war. During the period of the civil war, because of the uncertain trend of prices as the result of excessive issues of greenbacks there developed the policy of doing business on a cash basis. The practice of selling goods by sample, instead of by selection from stock on hand, developed during the eighties. The so-called doctrine of "implied warranties" originated as a result by which the risk and responsibility was placed upon the seller. Thus the use of the open account superseded the old method of drafts; this in turn caused sellers to offer cash discounts as a reward for prompt payment. Little by little, the cash discount open account system developed into its present form and today is the prevailing system in the majority of industries in the United States.

Since the passage of the Federal Reserve Act, the use of the trade acceptance in the United States has passed through three stages: (1) a period of gradual increase from 1914 until the autumn of 1917, (2) the war period, during which an active effort was made to increase the use of the trade acceptance. The Federal Reserve Act permitted the reserve banks to purchase bills of exchange or trade acceptances in the open market, as well as to rediscount them; promissory notes can only be rediscounted. Both the Federal Reserve Board and the National Association of Credit Men sponsored the use of trade acceptances and a special organization called the American Trade Acceptance Council was formed to wage an active campaign to increase their use. (3) A period of decline extending from 1919 to the present time. At the beginning of this period attention was called to the many abuses in trade acceptance practice. During this stage the American Trade Acceptance Council's name was changed to the American Acceptance Council and its attention was shifted to the banker's acceptance.

There has been since 1919 a gradual decrease in the use of trade acceptances. The exact extent of their use is difficult to estimate, inasmuch as many concerns use them as a collection instrument alone, that is, they do not discount

¹ The discussion of the history of the trade acceptance has been summarized largely from H. P. Willis and W. H. Steiner, "Federal Reserve Banking Practice," pp. 220-222, D. Appleton & Company, 1926.

them but merely hold them within their portfolios until they mature at which time they are presented to the acceptor for payment.

The banks have objected to the use of trade acceptances as a means of raising short time funds, because this entails the handling of many pieces of paper of small and uneven denominations. Naturally, the labor and expense required is greater than if the borrower were to give one promissory note to cover his entire needs. As a rule the banks have preferred, therefore, to loan on unsecured promissory note. The banks have found, too, that the risk involved must be investigated almost as thoroughly in case of trade acceptances as in the case of unsecured promissory notes.

Abuses of the Trade Acceptance. Among the abuses which have led to a gradual decrease in the use of the trade acceptance are the following:

The trade acceptance has been used in certain lines to collect overdue accounts, and has not been drawn at the time of the actual transaction. The practice is frowned upon by both advocates and opponents of the trade acceptance. It is generally agreed that a trade acceptance ought to be given at the time of sale, not after the transaction. To avoid this abuse, the Raw Silk Trade Council has provided a place on its standardized trade acceptance form for the date of the invoice.

A second abuse is that upon occasions two parties have agreed to exchange trade acceptances when no actual transfer of goods has taken place. A large New York bank recently found to its dismay that two parties had agreed to give trade acceptances, the one drawing an acceptance against the other and the other accepting it. The first party carried the false acceptances to the bank for discount. The second party at first paid a few acceptances upon their maturity to avoid suspicion. More and more acceptances were presented at the bank for discount. Finally one party defaulted and the other followed suit. The bank brought action and won its case, but in doing so it learned a valuable lesson, that is, the importance of investigating both the transaction and the two parties involved before discounting a trade acceptance.

Another abuse which has arisen is that successive trade acceptances have been used on the same goods in various stages of distribution. This, of course, leads to inflation and endangers the entire credit structure.¹

The Banker's Acceptance. The banker's acceptance is used primarily in financing export and import trade and in financing domestic shipments where the buyer and seller are unknown to each other, when because of distance or other reasons the seller finds it difficult to investigate the credit standing of the buyer. One of the common domestic uses is to assist in the orderly marketing of crops. It has been estimated that approximately 75 per cent

¹ For a searching analysis of the case of the trade acceptance vs. the cash discount system, see H. P. Willis and W. H. Steiner, "Federal Reserve Banking Practice," pp. 222-226; and for a discussion of the arguments for and against the use of the trade acceptance see E. E. Lincoln, "Applied Business Finance," pp. 461-473 and 476-479. The advantages of the trade acceptance to the buyer, to the seller, to the consumer, and to the banker are set forth in the booklet by Robert H. Treman, "Trade Acceptances," pp. 34-60, American Acceptance Council, 1930.

of the banker's acceptances are used in financing foreign trade while only 25 per cent are used in domestic transactions.

The bank acceptance is "merely a time draft drawn against a bank and accepted by the latter by stamping the word 'accepted,' the date, and the signature of an officer across the face of the draft." The prospective buyer of goods arranges with his bank to extend a line of credit sufficient to cover the anticipated transaction. The bank notifies the seller that an acceptance credit not exceeding a certain amount to cover the expected sale has been opened by the buyer. The seller draws his draft normally accompanied by bill of lading, and also by consular invoice in case of foreign trade, by insurance policies and the like; this he discounts at his bank at the prevailing rate of interest; his bank presents it at the bank which has authorized the acceptance, which in turn accepts the draft. After the goods arrive, the buyer must in order to take possession of them secure the bill of lading and other documents. To do this he must sign a trust receipt at the acceptor bank. Before the acceptance matures the buyer deposits funds in the bank sufficient to cover the acceptance. The banker's commission is paid as a rule at the time the draft is accepted. When banker's acceptances are used to finance readily marketable staples in storage, they are secured by warehouse receipts.

When because of legal limitations the local bank is not in a position to advance all the funds which its customer needs, the borrower may be able to obtain additional funds through the bank if the latter will accept a time draft drawn against the bank by the customer. The bank then sells this on the open market and credits the customer's account with the proceeds.

The distribution of acceptances is usually made through discount houses, through finance companies, and even through some of the commercial paper houses.

4. Loans Secured by Stock Market Collateral. During the stock market boom preceding the collapse in October, 1929, many concerns invested their surplus funds in good stocks considering that this was not only a legitimate use to make of surplus but also hoping to profit through a rise in the value of the securities. If a business concern has stocks or bonds within its portfolios, it can often persuade its bank to lend on these as collateral funds in excess of the amount which the financial standing of the company would ordinarily entitle it to receive. The bank will lend up to within a certain margin to cover any possibility of a change in the market price of the collateral or the necessity of selling the securities, should the borrower fail to pay the loan at its maturity.

This method of raising funds for a short period of time has recently proved popular, not only because as a rule the rate of interest on such loans is slightly lower than on unsecured promissory notes but also because concerns which had invested part of their surplus in securities during the stock market boom felt it advisable to hold these securities for the time being rather than to sell them at unfavorable prices. In preference to selling a block of these at a loss for the purpose of securing again part of the surplus so invested companies borrowed on such securities as collateral at their banks.

5. Commodity Loans. While business concerns customarily obtain their short-term funds by borrowing from banks on unsecured promissory notes,

at times such funds are obtained through loans against commodity collateral. By means of such loans the business concern can obtain a relatively greater advance than its own financial standing and credit rating would entitle it to obtain on its unsecured promissory note.

As a rule only non-perishable staples with a ready market are desirable as collateral from the bank's point of view. Such collateral is confined, therefore, largely to raw materials rather than manufactured goods. Included in this classification are: grain, cotton, wool, silk, metals, coal, oil, hides, leather, building materials, sugar, coffee, tea, tobacco, and the like.

The goods are stored in public warehouses from which the owner obtains warehouse receipts covering the items which he has deposited. The holder of the warehouse receipts may then borrow from his bank on his promissory note secured by the warehouse receipts up to within 10 to 25 per cent of the full market value of the goods. If such goods are being held for legitimate business reasons, rather than for speculative purposes, promissory notes secured by warehouse receipts covering the storage are eligible for rediscount. Paper, too, secured by warehouse receipts covering staple perishable food products such as butter, cheese, eggs, poultry, etc., carried for seasonable periods in cold storage is also eligible for rediscount if offered with the endorsement of a member bank at the usual rate for ninety-day commercial paper. Banker's acceptances are also employed at times to finance such staples in storage. These must of course be secured by warehouse receipts and are therefore referred to as "warehouse acceptances."

Banks have found that the moral risk in connection with commodity loans is almost as great as on unsecured promissory notes. This is illustrated by a recent example. In 1925, a chain of food stores borrowed on warehouse receipts covering the storage of sugar in a warehouse located in Brooklyn. An officer of a leading bank who had granted a loan on these warehouse receipts as security became suspicious and decided to investigate the existence of the collateral. It was found that the sugar was stored in the warehouse to the amount which the receipts indicated but when the firm failed a short time later it was discovered that duplicate warehouse receipts covering the same sugar had been used to borrow from four other banks. Naturally, the banks were the losers.

Borrowing on bills of lading against shipments is another means of securing funds for a short period of time. The usual procedure has been described in the section on Banker's Acceptances.

Specific merchandise in the concern's possession may also at times be used as collateral for loans. A chattel mortgage covering all of the borrower's movable possessions is sometimes given, but such a procedure is followed only as a last resort and as a rule indicates that the borrower is approaching bankruptcy. The "lease" and "conditional sales" contract are employed under certain conditions. It is rarely possible to borrow from the commercial bank on specific merchandise within a concern's possession. Such loans must generally be obtained from finance companies at a considerably higher rate of interest than the bank would charge on ordinary commercial loans.

6. Assignment of Accounts Receivable. Occasionally, in order to secure the necessary funds with which to postpone or forestall financial insolvency,

companies sell their open book accounts. This is referred to as "assigning," "hypothecating," or "pledging" accounts receivable. Loans of this type can seldom be obtained from the ordinary commercial bank but must be secured from finance companies at a higher charge than the customary rate of interest.

Either the notification or non-notification plan may be employed by the finance company. Under the notification plan, the debtor receives notice that his account has been sold or assigned and that he is to make payment to the finance company; under the non-notification plan the debtor is not notified but continues to make payment to the seller. The non-notification basis is naturally preferred by the borrower, but the notification plan is preferable from the point of view of the lender and of the community as a whole.¹ At the present time, the non-notification plan is the more usual one due to its convenience. A larger rate is charged by the finance company under this plan than under the notification plan because of the greater amount of credit and supervisory as well as bookkeeping work involved. Under either plan the borrowing company can usually secure advances not exceeding 75 to 80 per cent of the face value of its accounts receivable. The larger finance companies charge one-twenty-fifth of 1 per cent per day on the net face value of the receivables and in addition \$5 per \$1,000 on the first \$100,000 of receivables during any year.

7. Financing Installment Sales. Inasmuch as installment financing covering sales of articles other than automobiles presents much the same general problems as automobile finance and inasmuch as by far the greater part of installment financing is in connection with the sale of automobiles, the discussion will be confined to problems arising in connection with the distribution and sale of automobiles on the installment basis. Since commercial banks have never attempted to handle installment paper, borrowing of this type must be obtained exclusively through finance companies. The manufacturer's relation to the distributor or dealer is very similar to that in other types of business. The manufacturer sells his goods either to independent dealers or to his own agents; to the latter he makes concessions in terms and prices. In all cases it is customary for the manufacturer to demand payment in cash. A sight draft with bill of lading attached is drawn on the dealer or distributor. Before the latter can receive the automobiles for which he has contracted, he must secure the bill of lading; to obtain the bill of lading he must pay the draft. To enable the dealer to obtain possession of the automobiles the finance company loans the dealer up to 90 per cent of the total invoice price, less the finance charge which includes interest and insurance on the cars. The dealer gives his promissory note secured by warehouse receipts if the cars are stored in a warehouse or secured by the cars which are on the dealer's floor. The dealer has possession of the cars under a trust receipt but the title remains in the hands of the finance company. This is the so-called wholesale plan.

Since many of the dealers also sell at retail the wholesale plan is closely bound up with the retail sales plan. Under the latter plan the consumer-

¹ On this point see H. P. Willis and W. H. Steiner, "Federal Reserve Banking Practice," pp. 237-239.

purchaser makes a down payment usually amounting to one-third of the retail price if the car is new, or to one-half if the car is secondhand. The balance due is paid in monthly installments ranging from six to twelve months, ten months being the common period. The customer gives his note covering the amount due after the initial payment has been made plus the charges of the finance company. These include both interest and insurance and as a rule total in all about 15 per cent. Under a conditional bill of sale, chattel mortgage, or lease agreement, the buyer obtains possession of the car during the period that the note is being paid but the title remains in the hands of the finance company. Formerly the finance company collected from the dealer to whom the purchaser paid the installments as they fell due. Now it is more usual for the finance company to collect directly from the purchaser.¹

8. Miscellaneous Methods. Other methods of raising short-term funds which are occasionally employed are the following: loans secured by real estate and other property, loans on insurance policies, and character loans. Character loans are, however, as a rule for personal purposes; they may be obtained through such organizations as the Morris Plan banks and some of the large metropolitan banks. Such notes usually require two co-endorsers.

Estimating Short-term Requirements

It is good business policy to borrow only when by so doing profit will accrue to the firm. No concern can afford to borrow, at a rate of 10 per cent, funds which when used will bring to the company net profits of only 8 or 9 per cent. It is the duty, then, of the financial officer, when estimating probable short-term requirements to ascertain in advance whether the funds which he contemplates borrowing will, when used, bring to the company a net return considerably above the rate of interest which must be paid on the loan.

Legitimate Reasons for Short-term Borrowing. Among the reasons for short-term borrowing which are recognized as being legitimate are the following: It is considered good policy to borrow funds to purchase raw materials and labor with which to manufacture those goods for which the manufacturing concern has orders on hand, if the concern does not have funds sufficient to cover these needs. Such borrowing should be only for such period of time as that which intervenes between the time when the orders are received and the time when the invoices are paid. This period varies according to the terms of sale of the individual company which in turn depend upon the terms of sale which prevail within the industry. The usual range is from sixty to ninety days. The maturity of the loan should, therefore, correspond. In this instance as well as in all other cases of short-term borrowing it is essential to estimate the profit which will be derived from the borrowing in order to be assured that a net return will accrue to the company.

A second purpose for which it is considered legitimate to borrow funds is to cover seasonal peaks. It is rarely profitable for a company to secure sufficient permanent working capital through the issue and sale of its securities to take care of all of its seasonal needs. To pay dividends on stocks or interest

¹ For a full discussion of methods of installment financing, see E. R. A. Seligman, "The Economics of Instalment Selling," vol. 1, pp. 55-91, Harper & Brothers, 1927.

on bonds in order to have funds on hand throughout the year when such funds are to be used only for from three to six months within the year is on the face of the proposition poor business practice. It is usually to the company's advantage to pay interest on bank loans covering the duration of its seasonal peak or peaks rather than to have on hand during the entire year permanent working capital in sufficient volume to meet seasonal as well as all-year-round needs.

A third legitimate reason for borrowing is to *take cash discounts* which are offered for prompt payment of the company's bills. If the terms of sale are 2 per cent ten days net thirty days, by paying the bill in ten days instead of thirty days and taking the cash discount of 2 per cent the rate of saving for the remaining twenty days is equivalent to 36 per cent per annum. When net terms are thirty days it scarcely pays a concern to obtain a bank loan in order to take advantage of a cash discount of only $\frac{1}{2}$ per cent ten days but if the cash discount is 1 or 2 per cent then to borrow to take advantage of the discount is profitable.

Fourthly, it is often necessary for the company to resort to borrowing for *emergency needs*. In order to safeguard the company's credit standing or reputation, such borrowing is not only legitimate but pays returns over a period of years.

Budget of Short-term Requirements. To be reasonably sure of obtaining funds when they are needed, it is necessary to arrange for them in advance. In order to determine how large a line of credit is needed at the bank, or what amount of funds must be secured from other sources, some kind of an estimate or budget of the financial requirements of the period is absolutely essential to any well-managed business. It is important, therefore, to have well formulated plans for the entire business. The financial estimate is dependent upon the general budget covering all operations of the concern. The financial officer who is responsible for securing funds, whether he be the comptroller, the treasurer, or the vice president in charge of finance, must work hand in hand with the officer in charge of the general budget. The financial officer must determine certain safety points beyond which it is not advisable to borrow. If the budget estimates would require the borrowing of funds exceeding these safety points, it is the financial officer's duty to inform the director of the budget, and he in turn must make a general revision downward. The financial officer must also determine the amount of bank credit to be held in reserve for contingencies which are not included in the budget proper.

As soon as the amount of necessary borrowing has been carefully estimated it is the financial officer's duty to arrange lines of credit at the bank or banks with which the concern customarily does business, or, if he deems it advisable to secure the loan from another source, he will make arrangements with the commercial paper house, the finance company, or other source of funds as the case may be.

Selecting the Method of Short-term Borrowing. The majority of concerns find borrowing from their own bank or banks on unsecured promissory notes the most convenient and as a whole the most satisfactory method of obtaining short-term funds. Borrowing from the bank on stock market or commodity

collateral, if a concern has such specific collateral within its possession, as a rule carries with it the advantages of a lower rate and the possibility of more extensive accommodation than a concern's credit rating would ordinarily entitle it to receive on its unsecured promissory note. The better concerns can, however, usually borrow at about as low a rate on unsecured promissory notes. The smaller business concern finds it expedient and wise to stick to one bank. The larger, financially sound companies usually make a practice of borrowing from several rather than from a single bank, inasmuch as one bank can rarely offer sufficient accommodation due to legal limitations. Such concerns thus find it easy to make a periodic clean-up of their loans at one bank by borrowing from another.

For the welfare of any company, large or small, there are certain rules to be observed relative to bank borrowing. All details of the company's short term requirements should be carefully discussed with the company's bankers, and lines of credit should be arranged in advance. Absolute frankness and fair dealing is a policy which pays under all conditions. The bank's requirements in regard to the supplying of financial statements should be rigidly observed at all times. It is now customary to require semiannual and even quarterly statements of condition. These should be supplied voluntarily as a matter of good policy before the bank's credit department finds it necessary to request such statements.

It is well for the company's financial officer to consult with his banker or bankers frequently relative to the state of the company's business and its future. The bank's service department can in many instances render invaluable advice which will save the company much money and wasted effort. It is particularly advisable that the financial officer of the small business concern take his banker into his utmost confidence and consult him often as a matter of policy. Larger business concerns have in many instances found it beneficial to the company's welfare to consult a financial expert or firm of experts before undertaking any new project which would require additional financing either of a temporary or permanent nature.

To keep bank lines open to the extent of having on deposit at all times 20 per cent of the possible future requirements of the concern is a policy, which, at first glance, might appear to be expensive because of the fact that little or no interest is paid on such deposits, yet in the long run it has proved to be to the detriment of business concerns if such banking connections were not rigidly maintained. Concerns which have maintained cordial and satisfactory relationships with their bankers whether or no they were borrowing have found that in emergency cases the bankers have been willing to come to their rescue by loaning funds in excess of the amount which the financial condition of the firm would ordinarily warrant.

For the vast majority of firms, then, borrowing directly from the banks is the usual method of short-term financing, and the most satisfactory, whether such borrowing be through the medium of unsecured, one- or two-name promissory notes, or promissory notes secured by stock market or commodity collateral.

For the larger concerns, borrowing on the open market through the agency of the commercial paper house is often an expedient and very satisfactory

method of securing short-term funds. It has the obvious advantage of enabling the concern to borrow at a lower rate of interest and at the same time to keep its bank lines open for emergencies. A new issue of commercial paper can often be floated shortly before promissory notes sold on the open market fall due, in order to provide the funds with which to pay the notes as they mature. As a matter of caution, however, it is well to keep bank lines open sufficient to cover all open-market borrowing, so that if, due to some unexpected circumstance, the concern is unable to meet its obligations upon their maturity the concern can secure from its banks sufficient funds to enable it to pay its promissory notes when they fall due, thus conserving its credit standing and reputation.

If the smaller company's standing is not sufficient to enable it to obtain funds from its bank to cover its requirements, it has recourse to the finance company. The finance company loans funds against such collateral as commodities in storage or in the process of manufacture, or upon the pledging of its accounts receivable. Because of the risk in connection with the former and because of both the risk and of the detailed accounting and other labor entailed in connection with the latter, the finance company charges a considerable higher rate than the bank rate for such accommodation. Banks rarely loan on accounts receivable and then they prefer, naturally, the notification method as previously described. The assignment of accounts receivable is a means of financing only to be used in case of a really serious emergency. Such a procedure is detrimental to the credit standing of the company. Either of these methods of borrowing from the finance company are too expensive to be profitable under ordinary circumstances. They are, however, possible methods of securing additional funds when, in cases of dire necessity, a concern is unable to obtain from its bank funds sufficient to cover its pressing obligations.

There are certain specialized methods of financing suited to particular cases. The use of banker's acceptances is, for example, adapted to the financing of foreign trade, both exports and imports. There are certain industries, among them, the fur, jewelry, and textile industries, which have found the discounting of trade acceptances a satisfactory method of short-term financing. Installment financing requires specialized procedure and is handled exclusively by finance companies organized for this purpose, as has been previously discussed. But with the exception of these special instances bank borrowing on unsecured promissory notes is by far the most usual method of obtaining short-term funds.

Summary. During the long period of almost unbroken prosperity from 1924 until the autumn of 1929, business concerns accumulated cash balances. Companies took advantage of the ease with which new stock issues could be floated to obtain through the sale of securities sufficient funds not only to cover all working requirements but to provide surpluses for contingency needs as well. Part of the ample profits which were earned during this period were set aside by many companies as reserves for emergency needs instead of being distributed as dividends. The ironing out of seasonal peaks in some industries through carefully planned all-year-round production tended to eliminate the necessity of borrowing to cover seasonal requirements. During

this period, then, there was a tendency for business concerns to put themselves into a strong enough condition financially so that they were increasingly independent of outside funds for short-time purposes. As a net result there was a decided decrease in borrowing for short-term purposes. The striking decline in the amount of commercial paper sold on the open market during these years is not merely proof of the trend toward borrowing directly from the banks, as has often been thought, but proof also of a decrease in short-term borrowing by the larger corporations.

After the stock market collapse in the autumn of 1929, however, companies found it increasingly difficult to secure additional funds through floating new security issues. Stocks were no longer so popular as during the bull market, for the public had learned that participation in ownership might mean loss as well as gain. As surpluses accumulated during the long period of prosperity were gradually used up for contingencies and for working requirements during the depression which followed, corporations found it necessary again to resort to borrowing, either directly from the banks or through the agency of the commercial paper houses. The sudden increase during 1930 in the total amount of commercial paper sold on the open market was indicative of such a change.

CHAPTER VII

CONSOLIDATIONS AND MERGERS

TYPES OF CONSOLIDATIONS AND MERGERS

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This is an attempt to classify the various corporate and economic types of combinations in America and Europe. To accomplish this it has been necessary to trace, to a certain extent, the historical and legal development of the various types in each country and to discuss the economic changes responsible for this development. An attempt has also been made to clarify the terminology which has become badly confused and to make clear the relation of the movement to certain contributing factors.

Corporate Types of Combinations. There are three principal corporate classes of combinations:

1. Those based upon the exchange or purchase of stocks, such as holding companies, consolidations, and mergers.

2. Those based upon contractual relations such as cartels, trade associations, etc.

3. Those based upon common interest such as that occasioned by stockholders or banking interests common to two or more companies, or by group consciousness which leads a class, a community or a country to cooperate for their own interest, against other groups.

Combinations also exist which contain all three of the elements described.

Class 1. While the terms "holding company," "consolidation," and "merger" are loosely used to describe almost any sort of industrial, financial or commercial combination involving the purchase or exchange of securities, each type has a distinct technical significance from a legal, financial, and accounting standpoint. Although lines of demarcation are not always carefully drawn and although one combination may include elements of one or more types, nevertheless there is a distinct difference from a corporate standpoint, as will be noted from the paragraphs which follow:

Holding Company. The holding company, sometimes incorrectly referred to as a "trust," usually acquires its holdings in other companies by purchasing their stock. In many cases it does not own all the stock of its subsidiaries, but in most cases these subsidiaries retain their original identities.

Consolidation. The consolidation is usually effected by creating a new company which buys out the business of the old ones, taking over their assets and assuming their liabilities.

Merger. The merger is usually effected by one company purchasing, on a basis of net worth and earning power, one or more other companies, which thereupon cease to exist as legal entities.

In many of these cases the former stockholders may be compensated in cash, in stock, or in a combination of both, and may or may not become identified with the new management. When compensation takes the form of cash, it is quite usual to secure this cash by means of a public issue of securities which are distributed by investment bankers. Compensation is frequently graduated, cash, bonds or preference stock being paid for liquid assets, preference stock for fixed assets and common stock for goodwill based upon earning power.

Class 2. Cartels. Other types of combinations based principally upon contractual relations of a more readily terminable nature may be grouped under the general heading of cartels. While this term is used in Germany to denote "a voluntary combination of business enterprises engaged in the same line of business, and each retaining its independence, for the purpose of establishing monopolistic control of the market," it may equally well apply to a large variety of corporate, contractual and general associations of various sorts in this country, if the statement of purpose is modified to conform with present legal requirements.

In Germany, where organization is most complete, cartels fall into two general classes from a legal standpoint, the *trade association*, without legal entity, from which any member may withdraw at any time, differing little from the "gentlemen's agreement" and the *registered association*, possessing legal responsibility and entering into definite contractual relations with its members covering a stated period. These two classes accomplish their objectives by various means and may be divided into general types as follows:

1. *Price cartels*, which fix and regulate prices.
2. *Trade condition cartels*, which fix terms and trade conditions.
3. *Quota cartels*, which limit and regulate the output of an industry to prevent overproduction and ruinous price competition, usually by the apportionment of orders upon an agreed basis. This type very often distributes its products through a central sales agency and is similar to the old American "blind pool."
4. *Territory cartels*, which apportion exclusive territories.
5. *Patent cartels*, which pool and share patent rights. This type constitutes an important part of the international cartels.
6. *Standardization cartels*, which simplify and standardize their products.
7. *Purchasing cartels*, which establish central purchase agencies.

Class 3. Common Interest. The community of interest type of combination, strictly speaking, seldom possesses a corporate entity except when an incorporated community acts in its own interest against another community. The term is used here rather to include all classes of combinations not covered by classes 1 and 2, which although often loosely organized, nevertheless possess considerable power. Before they were declared illegal in this country, interlocking directorates would have come within this class. This method of combination is very prevalent abroad. Further discussion of

the common interest type of combination will be found in a subsequent section.

Legal Situation. A somewhat clearer understanding of the various classes of combinations may be secured by an examination of the legal history of combinations in various countries. This is briefly summarized in the paragraphs which follow:

United States. Abuses arising from combinations in the United States resulted in the enactment of regulatory legislation beginning in 1890. The Sherman Law, enacted in that year, made illegal "every contract, combination in the form of trusts or otherwise, or conspiracy, in restraint of trade or commerce among the several states, or with foreign nations" and forbade anyone "to establish or attempt to establish a monopoly."

This Federal Anti-Trust Law was supplemented by the Clayton Act and the Federal Trade Commission Law in 1914. The first made it illegal to acquire shares in another company when such action leads to "a real diminution of the competition between companies" or "tends to establish a monopoly," and provides against interlocking directors and officers, discrimination in favor of selected customers or against competitors.

The Federal Trade Commission was created to examine and report on commercial procedures which constitute an infringement of the anti-trust laws and to prevent unfair competition. Its activities are confined to interstate and foreign business, and do not include supervision of banks, railways, labor unions and certain agricultural interests. An important function of the Commission is that of advising with those who contemplate effecting a combination in regard to the probability of its legality. In 1918 the Webb-Pomerene Law excluded from the provisions of previous anti-trust legislation combinations engaged exclusively in foreign trade.

American Cartels. Anti-trust legislation in this country resulted in the disappearance of certain sorts of cartels. The trust agreement as a method of monopolistic control, the price cartels, the quota cartels, and the territory cartels whether in the form of blind pools or of "gentlemen's agreements" disappeared, violently or quietly, depending upon circumstances.

The trade condition cartel and the standardization cartel have survived in the form of trade associations of which there are at present in excess of 12,000 in the United States.

Patent cartels exist, certain companies being licensed to manufacture under patents held by others. Selling companies exist which dispose of the product of a number of companies manufacturing different products. Purchasing cartels exist in the form of retailers and wholesalers banded together to carry on mass purchasing.

Undoubtedly other types of combinations could be affected by means of long-term contracts, without the trouble and risk of corporate combination, if it were profitable to promote them.

Germany. The tendency in Germany in the past has been to effect combinations by means of cartels while the United States has favored holding companies, consolidations, and mergers. There have been several reasons for this. The German corporation law of 1870 was so lenient and so much abused that strict regulations for corporations were introduced in 1884,

Cartels, however, were tacitly recognized and a strong central government dealt with abuses. In 1923, the Cartel Decree was passed which was directed against the abuse of economic power. Cartels served very well so long as wastes of competition and sales were being principally dealt with. However, as wastes of production also began to be dealt with under more recent programs of rationalization,¹ a highly centralized and powerful administrative and executive organization became necessary. This has more recently led to an increase in combinations by means of holding companies and the like.

Both countries seem to have adopted the principle of prosecution when acts contrary to the public good are committed, basing action upon an examination of results, in each case, rather than attempting to define in exact detail just what is lawful and unlawful.

Other Countries. In Great Britain combinations are not governed by any special statute but are subject to the common law doctrine that restraints on trade are bad. No legal authority to require information in regard to the operation of combinations now exists. A somewhat similar situation exists in France and Italy, although in the former country a law was passed in 1926, making unreasonable price manipulation illegal.

General. Combination is instinctive. Since the dawn of history not only has man, but a great part of the animal kingdom, combined in order to survive and to attain their objectives in the struggle for existence. It is extremely difficult to exterminate an instinct by means of legislation. In a democracy effective legislation and satisfactory enforcement depend upon, and vary with, the ethical standards of the majority of the community.

So long as the human race exists, there will be combinations. So long as business is conducted primarily for profit, combinations to increase profits will be formed. At present there are three principal corporate forms of combination. These are permitted by law so long as they avoid acts believed contrary to the public good. At times legislation and enforcement interfere with the attainment of this objective. At other times business methods are adopted leading to abuses which arouse public opinion and force drastic legislation. In this respect anti-trust legislation seems to follow the course of legislation in general, with the maintenance of justice depending upon the reasonable conduct, self-restraint and regard for public good displayed by all parties concerned.

Economic Developments Affecting Combinations. From the standpoint of successful operation the economic form assumed by a combination is much more important than its corporate form. An understanding of the various economic types of combinations is necessarily predicated upon an understanding of certain economic developments affecting combinations.

These developments may be briefly summarized under:

1. Increased ease and speed of communication.
2. Increased ease and speed of transportation.

¹ Rationalization was defined in the final report of the World Economic Conference as "the methods of technique and organization designed to secure the minimum waste of either effort or material. It includes the scientific organization of labor, standardisation of both materials and products, simplification of processes and improvements in the system of transport and marketing."

3. Miscellaneous changes in the industrial and economic structure.
4. General education in economics and management.

The following paragraphs set forth briefly and incompletely, in statistical form, the principal changes which have taken place in these fields in the United States:

1. *Communication.* From 1860 to 1910 the revenue of the United States Postal Service increased from \$.27 to \$2.43 per capita or 800 per cent. From 1910 to 1920 it increased 69 per cent and from 1920 to 1927 it increased 40 per cent reaching the sum of \$5.76 per capita during the last year. Rural free delivery routes instituted in 1897 increased from 28,000 miles in 1900 to 993,000 miles in 1910, to 1,152,000 miles in 1920, and to 1,271,000 miles in 1927.

From 1902 to 1912 the number of telegrams and cables sent by United States companies increased 20 per cent; from 1912 to 1922, 75 per cent. Bell Telephone System messages increased 47 per cent from 1910 to 1920 and 65 per cent from 1920 to 1927. Telephones connected increased 45 per cent from 1920 to 1927. Wireless messages increased 85 per cent from 1907 to 1912 and 730 per cent from 1912 to 1922.

Mileage traveled by air mail increased 9,440 per cent from 1918 to 1924 and 53 per cent from 1924 to 1927. From New York a letter can now be sent to San Francisco in little more time than it formerly required to send one to Chicago.

The value of radio sets and accessories sold from 1922 to 1928 increased 980 per cent. The present radio audience is estimated at 40,000,000 as against 75,000 persons in 1922. No figures covering television are available.

It is estimated that there are 20,000 moving picture theatres in the United States whose receipts aggregate over \$750,000,000 annually. No figures are available covering the talking moving picture industry.

It is estimated that about \$1,250,000,000 is spent annually on advertising, nearly \$500,000,000 being spent for national advertising—about half in newspapers, a third in magazines, and the balance in outdoor and street-car advertising.

These figures indicate the immense increase in the ease and speed of communication, especially during the past few years.

2. *Transportation.* From 1860 to 1910 the railroad mileage operated in the United States increased from 30,000 to 240,000 or 700 per cent. From 1910 to 1920 it increased 8 per cent and from 1920 to 1926 it decreased .43 per cent. From 1906 to 1910 ton miles of freight carried increased 18 per cent as against an increase of 62 per cent from 1910 to 1920 and of 8 per cent from 1920 to 1926. Passengers carried one mile increased 29 per cent from 1906 to 1910, 46 per cent from 1910 to 1920 and decreased 25 per cent from 1920 to 1926. From 1923 to 1926 water-borne commerce of the United States of all sorts increased 13 per cent.

From 1910 to 1920 passenger car registration increased 1,695 per cent and from 1920 to 1928, 162 per cent. Track registration increased 9,960 per cent from 1910 to 1920 and 211 per cent from 1920 to 1928. It is estimated that busses increased 62 per cent from 1925 to 1928.

From 1904 to 1914 the total mileage of highways in the United States increased 14 per cent; from 1914 to 1921, 20 per cent; and from 1921 to 1926, 4 per cent. Surfaced road mileage increased 67 per cent from 1904 to 1914, 51 per cent from 1914 to 1921, and 45 per cent from 1921 to 1926. It is estimated that 7,000 miles of concrete roads are now being built annually.

Airplane production increased 160 per cent from 1921 to 1925, 153 per cent from 1925 to 1927, and 105 per cent from 1927 to 1928, with an estimate of a further 193 per cent increase for 1929. The Department of Commerce estimates all classes of airplanes flew 70,000,000 miles in 1928.

These figures indicate the enormous increase in the ease and speed of transportation, especially during recent years.

3. *Miscellaneous Changes in the Industrial and Economic Structure.* From 1860 to 1890 the wealth per capita in the United States increased 102 per cent; from 1890 to 1900, 12 per cent; from 1900 to 1912, 67 per cent; and from 1912 to 1922, 50 per cent.

From 1919 to 1924 the value of mail-order sales increased 5 per cent, grocery chain sales 116 per cent, 5 and 10 cent chain sales 87 per cent, wearing apparel chain sales 172 per cent, drug chain sales 53 per cent, cigar chain sales 39 per cent, shoe chain sales 33 per cent, and candy chain sales 91 per cent, as compared with increases of 23 per cent, 80 per cent, 39 per cent, 93 per cent, 46 per cent, 10 per cent, 14 per cent and 18 per cent for the respective classes from 1924 to 1927. During the first period the value of sales of nine wholesale lines decreased 11 per cent, and during the second period the value of sales decreased 3 per cent. Department store sales increased 27 per cent during the first period and 7 per cent during the second.

Production of electric power by public utility power plants increased 68 per cent from 1922 to 1927, kilowatt hours *per capita* consumed increased 55 per cent, and the number of electric service customers increased 71 per cent. From 1922 to 1928 the percentage of the total population living in electric lighted dwellings increased from 39 per cent to 67 per cent. The percentage of electrification of manufacturing establishments increased from 60 per cent in 1923 to 75 per cent in 1927.

The number of students annually enrolled in collegiate institutions increased 60 per cent from 1890 to 1900, 48 per cent from 1900 to 1910, 121 per cent from 1910 to 1920 and 75 per cent from 1920 to 1926.

These figures indicate the rapid increase in wealth, the trend toward mass distribution, and the immense increase in popular electrification and education in recent years.

4. *Education in Economics and Management.* During the war the people discovered that the educated officered the army. This stimulated interest in education. The general business slump in 1920 resulted in an immense increase in economic consciousness on the part of the public at large. All classes wanted to know just what had happened to them, and why, so that if possible it might be prevented from ever happening again. During the ten years following the war publications dealing with business, industry, finance and economics showed a large increase. Financial services multiplied.

The war stimulated interest in the science of management. Driven by the necessities of increased demand and lack of manpower nations scrapped

tradition and sought the one best way to produce. Knowledge was pooled. Resources were pooled. Governments effected industrial combinations of a sort which exceeded the wildest dreams of the imagination. The world learned to cooperate and the public became combination conscious.

Education in economics, in management, and in the value of combination naturally stimulated combinations. This education also stimulated speculation. Speculation has in turn stimulated further education.

Summary. The result of such unprecedented increases in ease and speed of communication and transportation, in education, in economics, in management, in finance, and in the value of combinations, coupled with such vital changes in the industrial and economic structure as have been cited, could only result in very great stimulation of the combination movement. On a basis of time consumed in communication and transportation continents are now closer together than contiguous counties were in former times. The war demonstrated the value of combination and education. Science has revolutionized the life of the people.

More specifically combinations were stimulated by:

1. The overbuilt condition of industry after the war.
2. The development during the war of mass production which resulted in the general introduction of:
 - a. Scientific methods of administrative and executive management applied to finance, sales, and production.
 - b. Simplification.
 - c. Standardization.
 - d. Labor-saving machinery.
 - e. Progressive machining and assembly.
3. Increased cost of equipment required for mass production.
4. Improvements in technical practice.
5. New inventions as the result of research.
6. The high cost of distribution caused by attempts to dispose of the increased output resulting from the above, and from attempts to further increase output and so reduce costs by high pressure sales methods, national advertising, national distribution, direct contact with retailers, etc.
7. The application of mass methods to purchasing and retail distribution through the medium of the chain store. This movement was further assisted by the trend of population toward cities, by the development and popularization of the automobile, and by the growth of hard-surfaced highways.

In the section which follows an attempt will be made to indicate the results of these vast and recent developments as they affect the economic form of combinations.

Economic Types of Combinations. The principal economic types of combinations, classified on a basis of their economic reason for existence, are defined in the following paragraphs:

1. *Horizontal.* The horizontal combination, which is the commonest type, in its simplest form, is a combination of industries manufacturing a single product—as matches or automobiles.
2. *Vertical.* The vertical combination is a combination of a number of industries of such a sort and in such a manner that the finished product of one becomes the raw material of the next. The complete vertical combination

begins with the raw material as supplied by nature and ends by placing the finished product in the hands of the ultimate consumer.

3. *Allied Industry.* The allied industry combination is a combination of industries manufacturing articles of a similar nature, or articles which can be sold to the same market.

4. *Chain.* The chain type of combination is a combination of businesses serving the public in some capacity, usually in different localities, which can secure certain advantages by combination.

5. *Local.* The local type of combination is a combination of industries located in a simple community, and formed usually for the purpose of strengthening their strategic position.

6. *Seasonal.* The seasonal type of combination is a combination of industries whose peak loads of business occur during different seasons of the year for the purpose of distributing the load throughout the year in the interest of more efficient operation.

7. *Cartel.* This type of combination includes any form of combination formed for mutual benefit on a contractual basis.

8. *Common Interest.* This type of combination, which is the least organized, *per se*, of any of the types enumerated, may assume almost any form for the purpose of improving conditions in which the parties involved are interested.

9. *Mixed.* This type consists of combinations embodying features of more than one of the types previously enumerated. Furthermore it should be observed that one or more of the various types mentioned may take place on the manufacturing level, on the wholesale level, or on the retail level of production and distribution, or on a number of such levels. This makes it difficult to empirically classify existing combinations and to demonstrate statistically the exact prevalence of each type.

1. *The horizontal combination* was one of the early American developments because of the fact that the original idea of combination was to effect a monopoly. Destructive competition, like war, eventually induces a desire for peace, and, as competition became unbearable in certain industries in the late eighties and the early nineties, the thought naturally occurred that if all the manufacturers of a given product could combine and raise prices, business would be very profitable indeed. The early combinations, therefore, consisted of manufacturers who combined with this end principally in view. From 1897 to 1900 extensive use was made of the corporate form known as the "voting trust" under which manufacturers turned their stock over to trustees and received trust certificates in exchange. As a result of this movement, the anti-trust legislation previously referred to was instituted in 1890, trusts were proved illegal, and the Supreme Court ordered the dissolution of a number of concerns of this type which were particularly active between 1904 and 1914. In 1912 the decision in the case of the United States Steel Corporation virtually legalized combinations which did not control more than 40 per cent of the output of an industry.

In spite of legal restrictions the horizontal type of combination has continued to flourish. Such combinations have been profitable to promoters and investment bankers; they have provided founders of businesses who

wished to become less active with leisure and with diversification for their investments; they have enabled young men of ambition to increase their power and prestige; they have enabled the public to participate in the earnings of closely held companies.

In addition, even though price control has been proven illegal, such combinations have retained very real economic reasons for existence. For example this type of combination:

- a. Tends to insure a lower cost of production through continuous quantity production of standardized articles.
- b. Saves expense through the consolidation of administrative, executive, sales, advertising, and similar departments and activities.
- c. Saves transportation charges on raw material and finished products.
- d. Provides for pooling of knowledge, methods and processes.
- e. Makes mass purchase possible, with assurance of uniform quality and low cost of raw materials.
- f. Makes maintenance of superior quality possible.
- g. Reduces interest and depreciation on stores of raw material and semi-finished and finished products.
- h. Reduces amount of capital required per unit produced.
- i. Increases ease of financing, since securities are more liquid and more stable.
- j. Permits the most effective use of research laboratories.
- k. Increases security of patents and trade marks.
- l. Permits use of highest class of administrators and executives.
- m. Permits retention of highest class of staff experts, lawyers, engineers, chemists, accountants, statisticians, etc.
- n. Makes comparative management possible together with the most effective administrative methods.

Furthermore when a horizontal combination is formed of concerns manufacturing heavy goods, which are confined to the locality in which the plant is located by high freight rates, it is possible to apply pressure, in cases of destructive competition, to isolated competitors by cutting prices in that locality while still maintaining them at profitable levels in other districts.

An enumeration of the industries which have taken advantage of this type of combination would read like the roster of the United States Chamber of Commerce. While every such combination has not been successful, it must be remembered that management, fashion and price are even greater factors in the success of a business than combination, and that acquisitive ability does not necessarily imply administrative and executive ability. The fact remains that horizontal combinations have been popular and are likely to remain popular for some time to come.

2. The vertical combination probably originated in this country in corporate form with the Carnegie Steel Company, although the type received the greatest publicity in Germany after the war when, under the title of *Konzern*, it very largely replaced the cartel. Owing to financial and raw material conditions, it ran wild until about 1925 when, with the collapse of the *Stinnes Konzern*, it was largely replaced by the cartel; although vertical combinations that were strictly complementary and in line with the tendencies toward the reduction of all costs including those of production, distribution and

competition (rationalization) survived. At present the Ford Motor Company probably represents one of the most complete examples of the vertical combination in this country. The Anaconda Copper Company is another example and a number of oil companies are almost completely integrated. Certain other companies such as the American Telephone and Telegraph Company with its subsidiaries, Sears, Roebuck and Company with its manufacturing plants, and certain textile and food companies are examples of partial verticalization. Recent combinations of moving picture producing companies and theatres chains are also examples of this type.

The economic reasons for existence of the vertical type of combination are much the same as for the horizontal type although savings in transportation are not likely to be as great. The assurance of uniform quality and the absence of fluctuation in the cost of raw materials is likely to be somewhat greater. Somewhat less cash is required because payment for raw and semi-processed materials between successive integrated units can be made in the form of credits. Comparative management is not so strong a factor in the case of the vertical type combination as in the case of the horizontal type.

Furthermore, in cases of destructive competition it is possible with this type of combination to apply pressure to competitors by foregoing profits on one or two levels while retaining them on others; and thus securing profits from the structure as a whole, while reducing final prices below competitors' cost of production.

The success of a vertical combination depends largely upon the care with which integration is effected. For instance:

a. It is necessary that the structure be balanced. Each unit should be capable of absorbing the full output of the unit below it. Otherwise the unit below will be forced to operate at part capacity or to sell part of its product to competitors at considerable disadvantage. Consider the position of an automobile parts factory shipping half its product to the finished car unit above it in a vertical combination and forced to sell half its output to competing car manufacturers.

b. Every unit must be an efficient, low cost producer. Otherwise there will be times when the unit above will be handicapped by being forced to take materials at prices above which they could be bought in the open market. This has seriously interfered with the success of certain British steel companies who have had to take the coal of subsidiaries at a cost in excess of open market prices.

c. It is usually inadvisable to carry the verticalization downward below the point of reasonable control. For instance in the case of raw materials produced from mines the quantity produced can be controlled and the probable cost predicted. Vertical combinations using wheat, cotton, livestock, etc., whose quantity and price are dependent upon the weather and upon the idiosyncracies of a large and highly individualistic group of workmen so far have found it much more profitable to buy in the open market, rather than to undertake the production of the basic raw materials.

3. The allied industry type of combination is by no means new in this country. International Business Machines Corporation, formerly the Computing-Tabulating-Recording Company, represents one of the oldest and

most successful examples of this type. A number of similar combinations have since been effected in the same general field.

A more recent allied industry combination was formed in the hotel supply field and included companies manufacturing refrigerators, carpets, beds, furniture, wood products, pianos, and two sales corporations. There are also such combinations in the builders supply, furniture and floor covering fields. The recent combination of a radiator company and a manufacturer of sanitary ware and plumbers' supplies was of this type.

Public utility combinations are frequently of this type selling heat, light, power and transportation, gas and electric power, etc. In many cases a certain amount of verticalization exists, such companies owning coal mines, etc.

Certain trade-marked food companies have acquired a considerable number of other companies manufacturing nationally advertised food products. There have been similar combinations in the grocery and drug fields.

The economic reasons for existence of the allied industry type of combination are much the same as for the horizontal type although savings in transportation and from the combination of sales forces is not likely to be so great. In the early days of allied industry combination, attempts were made to induce salesmen experienced in only one line to sell the complete line. In a great many cases this was found to be impracticable, with the result that in most cases less attempt is now made to combine the sales forces at the time of combination.

This type of combination frequently results in the attainment of a higher degree of manufacturing efficiency because it permits allocation of a single product or group of products to single plants which can then specialize on this product or group with extremely beneficial results.

The allied industry type of combination is particularly effective in dealing with destructive competition, since it can apply pressure by cutting prices in one field while still operating at a profit in others.

Furthermore, in certain cases one product possesses such merit or is so protected by patents that purchasers who need this product can be induced to purchase the other products of the combination. This is a particularly effective method of combating demand for price reduction from mass buyers such as chain stores, etc.

4. The chain type of combination is as old as the branch office combination which permits the extension over wide territory of principles and methods which have proved successful in one locality. The chain store is of course the most recent and spectacular development. Besides these there are chains of bakeries, banks, hotels, barber shops, gasoline stations, theatres, taxicab concerns, etc.

The chain store movement has grown so rapidly during recent years that no authentic figures are available covering the situation, although sales through this medium in the United States have been estimated as in excess of \$8,000,000,000 annually, constituting more than 20 per cent of all retail sales. The situation may be summarized as follows:

- a. A situation favorable to the growth of the chain store movement was created by:

- (1) The increase in manufacturing capacity due to the overbuilding of plants during the war and to increased efficiency secured since the war by means of standardization, mass production, labor-saving machinery and more exact methods of management.
 - (2) The increase in the cost of distribution due to high pressure sales methods, large advertising appropriations, and the coverage of greater territories for the purpose of disposing of greater volume.
 - (3) The disappearance of retail outlets in small towns due to the popularization of the automobile and the construction of hard-surfaced roads.
 - (4) The general weakness and inefficiency of the small retailer generally.
- b. The development by men of unusual ability of standardized methods of retailing, based on the scientific determination of such controlling factors as store location, layout, high turn-over goods, buying habits of the public, etc., contributed to the growth of the chain store to the point where mass buying direct from the manufacturer became possible; with attendant vertical integration extending in some cases from the purchase of raw material to the disposal of goods to the ultimate consumer, as in the case of the manufacturers' and mail order chains.
- c. As a result of the economies of distribution effected by this integration and growth of the chain store movement, the manufacturer-wholesaler-retailer system of distribution has been almost destroyed in some fields and is being seriously threatened in others.
- d. Although retailers and wholesalers are forming cooperative associations to resist the chain store movement by adopting its methods, such expedients seem to be successful only where sufficient ability and concerted action exist to permit an approach to chain store efficiency.
- e. Meantime the chain store movement is growing rapidly, and the future of the manufacturer-wholesaler-retailer system of distributing the great mass of merchandise consumed is in many instances so seriously threatened that the future of the great majority of its members would seem to depend upon their ability to become part of or associated with integrated groups, capable of manufacturing *en masse* and distributing merchantable goods at a cost sufficiently low to compete with existing integrated chains.
- f. Such integration seems to be taking the form of:
- (1) Associations of retailers with the wholesaler acting as purchasing agent.
 - (2) Retailing by wholesalers and manufacturers through their own outlets.
 - (3) Entrance of mail-order houses into the chain store field.
 - (4) Exchanges of stock between manufacturers and chain stores.
 - (5) Consolidations of manufacturers of different articles whose goods can be sold through chain stores or department stores, with each other, and with existing chains.
 - (6) Leased departments in community stores, and long-term contracts similar to the European cartel.

The economic reasons for existence of other types of chains are similar in principle to those enumerated under paragraph *b* above. In the case of bakery chains, theatres, and gasoline stations considerable vertical integration is also taking place. In the oil industry this is coupled with horizontal combination. The whole chain movement is so vast and is extending so rapidly that the eventual outcome is difficult to foresee with any degree of certainty.

5. The local type of combination is rather rare owing to the lack of any well defined economic reason for existence in most cases. A combination of this type was recently formed in the West which comprised a sewing machine company, a piano company, and certain furniture plants located in one town. One was once formed in an Alaskan city which combined nearly every business house in the locality. During the war, industries united in various cities to secure, train, and deal with labor.

6. The seasonal combination is quite common and is the result of attempts to utilize labor and equipment throughout the year, rather than at stated seasons only. Examples of this type are combinations of coal and ice companies, coal and brick companies, coal and builders' supply companies, oyster and ice cream companies, and the like.

7. The cartel type of combination, which is based upon a contractual relation undertaken for mutual benefit by interests possessing similar aims, ranges from the trade associations whose members agree to pay annual dues to associations which (in Germany) fix prices and establish production quotas with penalties for violation. The various types have been quite fully discussed in the section on corporate types.

In this country the trade association has been encouraged by the government and has done much to stabilize industry. Uniform methods of accounting and uniform trade discounts have been established. Standardization, simplification, and the elimination of waste have been encouraged. Group advertising has been undertaken. Research has been financed and encouraged. Information in regard to production, sales, and technical methods has been disseminated and considerable benefit has been secured without arousing criticism from government authorities.

8. The common interest type of combination was at one time well organized in this country by means of what was known as "interlocking directorates." These were discouraged under the Clayton Act in 1914. At the same time there is no reason why men who can bring business to a company should not be elected to its board of directors. There is no law to prevent an individual, a banking group, or an investment trust from owning stock in competing companies. There is nothing to prevent such interests conferring in regard to matters of mutual concern and advising with executives, provided no statute is violated.

Investment trusts have increased and grown so rapidly in the last year or two that certain large corporations have created special departments to deal with them. They have also been used as a means of effecting consolidations. In certain instances they approach closely the holding company.

Certain manufacturing concerns have sold chain stores substantial blocks of common stock on advantageous terms in order to secure their interest in marketing the lines manufactured.

It is very common for the citizens of towns, states and nations to unite to stimulate the use of goods manufactured within their own boundaries. Certain classes such as farmers, laborers, and the like form associations and unions to further their own interests.

While many such communities of interest are not sufficiently organized to permit strict definition as combinations, nevertheless they are in effect

combinations and collectively they exert immense power. Under the circumstances they must be given consideration in any analysis of the combination movement.

Export Combinations. In 1918 the Webb-Pomerene Act provided for the exemption from anti-trust laws of any combination engaged solely in export trade, provided it in no way interfered with domestic trade, the export trade of a domestic competitor, or with domestic prices. This act was designed to aid American exporters to meet on equal terms the aggressive competition of the more powerful combinations in foreign countries.

In all countries the mobilization of production and distribution, in response to the exigencies of war, revealed to the nations of the world the advantages of coordination and combination in industry. As a result, export trade associations and combinations in foreign countries increased greatly both in numbers and in strength, aided and encouraged and sometimes participated in by their respective governments which recognized the importance of export trade cooperation.

Although the largest manufacturers possessed effective export departments some of which even conduct scientific market analyses and promote and finance enterprises which will consume their product, smaller manufacturers were at a considerable disadvantage. The new law in the United States encouraged the formation of combinations which might compete abroad, offer a diversified line of products, and secure numerous economies of distribution and standardization.

In accordance with the provisions of this law, a number of combinations have been formed. These include export associations and corporations covering copper, steel, oil, zinc, lumber, sugar, flour and wheat, milk, sulphur, tires, abrasives, cement, locomotives, food products, paints and varnishes, fertilizers, buttons, etc.

European Types of Combinations. *Great Britain.* Holding companies, consolidations, and mergers are found in Great Britain although few are purely of the types previously described. Many are holding companies to some extent and consolidations to some extent, while they may also have allied themselves with other companies by means of exchange of shares or interlocking directorates. There are a number of instances of the above mentioned types dominating and existing side by side in the same industry with cartels which are known in Great Britain as "terminable associations." On the whole, however, Great Britain has in the past proved by no means so fertile a field for the growth of organized combinations as the United States and Germany.

The cartel (terminable association or gentlemen's agreement) has been common at all times, especially in local trade. These associations which aim at limiting competition attain their end principally by fixing minimum prices and by variations of the pooling and rebate systems.

Vertical consolidations exist in the steel industry together with various types of cartels. The same is true in engineering and shipbuilding. One of the most complete verticalizations in the world exists in the British soap industry, the concern in question producing 75 per cent of all soap made in the country. Pig-iron manufacturers control the bulk of their supplies of ore and coal.

Certain consolidations partake both of a vertical and horizontal character as in the case of the chemical and allied industries in 1926. Consolidations of considerable size exist in the textile, explosive, tobacco, and distilling industries. Consolidations have recently been effected in the coal, cotton, and fertilizer fields and there have been mergers in the electrical industry.

Recent developments seem to indicate that the cartel has broken down to a considerable extent, as is usual under intense competition. As a result, the highly individualistic attitude of the British industrialist of the past has begun to succumb to the necessity for combination in the interest of effective large scale production which is being undertaken under a program of rationalization.

France. Although France contains some large and well-managed vertical combinations, especially in the motor, engineering, shipbuilding, and steel industries, large combinations are rarer than in Great Britain. This is partly due to fear of prosecution for unreasonable price fixing, partly to a tendency toward individualism and secrecy, and partly because luxury goods which constitute a considerable proportion of French production do not readily lend themselves to mass manufacture.

Four combinations dominate the electrical industry. The aluminum industry is practically dominated by one concern. Two concerns dominate the heavy chemical industry. Combinations have recently occurred in the dyeing, light chemical, cement, and wine industries.

Cartels exist principally in the form of the *comptoir* which is an incorporated trading company composed of manufacturers who turn over to it the sale of their products.

Consolidations and mergers seem to be following the general tendency and increasing. Chain combinations are increasing rapidly, principally in the grocery and department store fields. Sales in the former were estimated at \$220,000,000 in 1927.

Germany. The situation in Germany has already been covered in sufficient detail. The cartel was replaced after the war by the vertical consolidation which has since been replaced in many cases by the cartel.

The present trend is toward consolidation in order to increase the effectiveness of production under a program of rationalization. This is being carried out under highly centralized and powerful central administrative and executive control in the coal, iron, steel, air transport, metal, engineering, copper and brass, printing, chemical, dye, potash, cement, and other industries.

Italy. Italy is handicapped industrially to a considerable extent by lack of raw materials. However, there are some large vertical and horizontal combinations especially in the engineering, shipbuilding, steel, and motor industries as well as in the public utility field.

International Combinations. It has been estimated that there were over a hundred international combinations, principally of the cartel type, before the war. These covered transportation, coal, oil, tobacco, cotton, ore, metal, stone, earth, electrical products, chemical, textiles, porcelain, paper, etc. As a rule the object of these combinations was the regulation of competition and the exclusion of foreign competition from the home markets of the participants (dumping).

Sales territories were apportioned, prices were regulated and credit terms, packing practice and selling methods arranged. Sometimes patents and technical knowledge were exchanged.

While most of these combinations were broken up during the war, many have since been reorganized. Present developments indicate that the international combination is likely to be more far-reaching in the future than it has in the past. The movement has already been carried on to an extent greater than at any time in history. It marks a reaction from the extreme economic nationalization indicated by discriminatory tariffs, commercial treaties, and other governmental controls and points a return to international solidarity. Leading authorities consider the movement to be only beginning.

General Conclusions. Any analysis of the situation inevitably leads to the conclusion that the combination movement is growing and extending rapidly throughout the industrial, commercial, and financial world. Increased speed of communication and transportation was responsible for the movement during the last quarter of the nineteenth century. The movement was vastly accelerated by the World War which broke down the barriers of tradition, individualism, and secrecy; and substituted cooperation, coordination, and combination; stimulated education in management, economics, and finance; and further speeded up communication and transportation.

The combination and rationalization of industry, nationally and internationally, coupled with the ownership of industry by the people at large through the wider public distribution of industrial securities, are leading rapidly toward changes in our civilization of the utmost importance.

What the final result will be or what difficulties will be encountered, before the economic and industrial democracy which many foresee will be firmly established, are at present beyond the scope of our vision. We do know that the transition is becoming daily more rapid and that the results will be far-reaching. Beyond that point prediction is as yet unsafe.

FACTORS TO CONSIDER IN WORKING OUT MERGERS

BY A. D. BERNING, *Partner, Ernst & Ernst*

The many mergers that have been made and the many that are in the making afford ample laboratory material for doing the research work necessary for the determination and study of at least the principal factors to be considered in working out mergers.

But to qualify as an authority on these factors, one would need a great many opportunities to follow very closely the process of merging from conception through to conclusion and then of watching each of the resulting unions for a period of its operation as a going business.

I have not lived long enough nor have I had opportunity in a sufficient number of cases, to qualify as an authority on the subject. I have participated however, in a number of meetings where the economic, legal, financial and other phases of the merger were carefully reviewed and discussed and after consummation of the merger, have had opportunities to discuss with the management the problems that confronted them in the practical working of

the merged operations. The proof of the pudding is in the eating; but in the case of mergers digestion must be taken into account. The digestive process, in some cases, is prolonged and at times painful. If we watch it carefully, we can learn much. This knowledge we can transmute into what we may call factors to consider in working out mergers.

The Human Factor. Some of the factors that must claim our attention are, of course, working capital, valuations, plant capacities, geographical location, patents, trade-marks, earning power, merchandising, distribution, and so on. All of these are important and no venture is likely to succeed unless they are duly considered. Too frequently, however, we are tempted to dwell on these physical and technical aspects of the proposition and call it a day without paying much attention to the human factor.

The human factor, if we can call it that for want of a better name, is frequently more potent in influencing the issue, to merge or not to merge, than those material quantities that can be measured more or less satisfactorily, with some kind of yardstick. Whatever may be the factors, the interested parties will be influenced in their consideration of them by what their best interests appear to be. More projects that had for their object the merging of business interests have fallen by the wayside and been left abandoned there because of the human factors that entered into the negotiations, than any that have failed as a result of disagreement on relative values. Yardsticks that have so far proven fairly satisfactory in the measurement and valuation of physical factors are not adapted to gauging the human factor in its many phases and complexities.

Compatibility. Willingness on the part of some to throw in their lot with others is quite a factor and worthy of a great deal of consideration. Mutual respect based, of course, on mutual confidence that has for its foundation the character and the habits of the interests to be merged, has had its effect in finally consummating deals of this kind. I know of a case where the people in control of a fine old company refused a very substantial offer to sell out to other interests, their sole reason being that they held their business and its goodwill in too high esteem. Some time later, they accepted a much more modest amount for their interests from another competitor who they felt would provide more harmonious surroundings.

So we come to a consideration of the character of the interests involved as an important factor in working out mergers.

"Trading" and Compromises. In merging, the trading abilities of the participants are directed to the protection and if possible, the enhancement of their values. Merging involves trading in all that the term implies. There is that which is written in the contract and that which may be implied or understood; and that which is without the contract is sometimes the compromise.

Not infrequently, the compromises, or if we may use another term, the "implied obligations" which a management may feel it owes for goodwill, influence or in recognition of stock ownership or some other real or imaginary consideration, contribute the most to the prolonged and painful digestive process which may follow the merging operation.

Every Merger Is Different. No two mergers are similar or even comparable in many of their major problems. Every merger, large or small, has its own

peculiarities. One merger involves factors that another does not and factors that may be common to both will have a different order of importance in one than in the other. There may be, for example, serious problems related to ownership of units to be included in a merger. Many times when the securities of one or more units are lodged in trust estates or in the hands of various individuals, the nature of the securities to be issued has to meet individual requirements. In many cases a much larger amount of banking assistance is needed because of the cash payments to be made to owners. As a consequence the banker is often in a much stronger position to dictate the particular kind of securities he desires to purchase to meet existing market conditions.

In a recent case it was possible for five companies to merge without new financing. This was, in many respects, an ideal situation. The capital structure could be created with a view to minimum fixed charges because all stockholders of the five companies were willing to accept all common shares.

However, there are certain basic questions that apply to all business consolidations and it is to these that I shall direct your particular attention.

Six Fundamental Factors. The present era is primarily characterized by mergers. In practically every form of industrial activity, individual enterprises are rushing into the trend. What then prompts these separate business concerns to weld their physical and intangible assets, goodwill, and future prospects? If we have been students of the movement, we are conscious of many mergers which are now having varying degrees of success. In a number of cases we deduce that the participants, when their merger was conceived, did not realize or give sufficient attention to the importance of the fundamentals and have suffered consequent disappointments.

From experience, I should say that the more important factors to consider in any merger movement are:

1. Economic and legal soundness of the merger.
2. Management.
3. Financial position.
4. Earning power.
5. Formula or plan of merger.
6. Launching the merged business.

Economic and Legal Soundness. The question of economic and legal soundness is one which should be very carefully studied in advance of all others. Unless there is a sound economic reason for a business consolidation from the more important viewpoints, it can hardly be justified. By sound economic reason I mean sound expectancy that the combined concerns will be able to operate with greater benefit to the old owners and the public as well. There should be the least possible doubt about the original investment of the contributors being kept intact.

Without discussing the legal aspects I should mention that the provisions of the Sherman Anti-Trust law or the Clayton act, which respectively have to do with combinations in restraint of trade and creation of a monopoly, may require consideration. Also the problem of taxes, because the cost of doing business in the different states varies greatly and the trend of state taxation is becoming increasingly important. In these and many other matters the advice of recognized legal counsel is a prime necessity.

Points of Economic Soundness. The factor of economic soundness has many important angles from which a proposed amalgamation should be visualized. The physical facilities employed in the business should be modern and well-adapted to its purpose and at least on a par with the facilities of other companies in the same business. The properties of manufacturing companies should be viewed from the standpoint of not only their reproductive and present sound values but also their useful value to the new company. The probable future of the industry should receive careful thought as well as the probable ability of the new company to meet any new conditions which may arise and affect its stability.

The location of plants is important. For example, a contemplated merger of manufacturing companies situated on the eastern seaboard would call for consideration of the need of facilities at strategic points in other sections of the country for both production and distribution. There have been many mergers wherein the locations of the plants were such as to presuppose subsequent large expenditures in new plant construction. This has had the two-fold effect of unnecessarily tying up capital in new permanent assets while making certain properties in the original capitalization more or less obsolete, thereby reducing the value of the securities issued at the time of organization. I could cite cases of merger, actually consummated in which this problem, having been overlooked or not squarely met at the proper time, resulted in unanticipated revamping of the whole factory program or the establishment of extensive branch and warehouse organizations to improve distributing facilities. This is not only a matter of capital—capital tied up permanently—but also one that involves many items of overhead expense.

In view of labor conditions, labor costs, freight rates, exigencies of distribution, and so on, a merger may necessitate radical rearrangements of manufacturing, whereby production of a particular class of products can be concentrated in one plant and production of a variety of products consolidated in another. When this is the case, the inevitability of manufacturing problems and of outlays for more or less extensive plant changes should be taken into account while the amalgamation is still in its prospective stage.

Concerns that contemplate merging on the basis of producing somewhat similar lines of merchandise must give sufficient thought to the very practical question of differences in quality and prices. Such differences may have made the lines quite unrelated in a seemingly competitive field. Also it may be that most of the sales of one or more of the companies are to large customers such as mail-order houses, chain stores or wholesalers. Sales policies that the merged business would have to adopt might easily make volume or earnings or both, less than originally expected.

Merging Is Not a Panacea. It is all too easy to assume that, by combining several companies, great economies in many directions can be effected. But this does not always work out in practice. It frequently happens that expected savings are rather negligible in the final result. Often such economies as are realized are more than offset by new general administrative expenses which must necessarily be absorbed in the combined profits of the individual units. Well-intended centralized control of units sometimes amounts to interference with their efficiency and retards the development

of local talent. So I regard the proposed general administrative organization, and its probable cost, as a factor which should be given more serious thought than it often appears to receive in the present merger movement.

Economic soundness of a consolidation depends materially upon the economic soundness of its constituents and whether or not their relations with each other will be satisfactory. When a concern joins a merger it goes into partnership with all the other members. Each should consider the desirability of the others and whether or not they can work harmoniously together for the combined good of all.

Merging operations, well-conceived and capably worked out, are productive of a great number of real benefits and among them is one that I wish particularly to mention. The large enterprise arising from a merger is likely to have resources for organized research which the companies individually could not afford. The merged business, by retaining trained engineers, chemists, statisticians, market analysts and so on and having the work properly directed, becomes able to reach further and with a stronger arm, for the improvements essential to its progress.

Mergers, in themselves, are no panacea for diminishing returns on investment. Any concern entering one on a contrary theory is liable to be disappointed. Again, I believe that unless there is a sound reason for a merger and a sound basis—all plainly discernible in the form of definite prospective benefits—then the companies, in most cases, are better off if they operate independently.

Management. Next in importance to the factor of soundness is the question of management. Management implies leadership. Leadership includes acceptance of responsibility, coordination of effort, development of new ideas and ideals and the perfecting of organization not only in the large but in all its many details. The future of almost any consolidation depends very greatly upon the kind of management that it gets. The first year or two will, in all probability, be accompanied by many unusual problems requiring tact, resourcefulness and judgment. These are only a few of the qualities which we expect in the highest degree from good management.

First, the project must have a prospective executive head who not only has the knowledge and ability to direct the affairs of the combined group but also commands the confidence and respect of all the participants. I have seen proposed mergers fail for want of an able leader. Sometimes it is necessary to go outside the participating companies to find the desired executive head. The entire executive personnel should be considered, which means a selection of the best material for all the executive positions. It is not a matter of finding jobs for men but of finding and making men for jobs. Next, the management of the local individual units should be carefully planned, with a view to perpetuating each unit's successful operations. If any important executives or employees are to retire, it is important to know the reason for their retirement and gauge its probable effect on the future of the business.

Surplus Executive Talent. A merger of sound companies—whether or not the merger itself is sound—is very apt to create an embarrassing surplus of desirable executive talent. The question of what to do with these men is an exceedingly important one. If executive authority in a department be

divided, the possibility of inevitable friction will exist. If the surplus ability be carried along in such a way that friction will be avoided, the consequent overhead will reduce the economies that should result. The key executives in companies to be merged usually have groups of employees under them, doing responsible work. Some of these subordinates are affected by each selection made between two or more key men for one of the positions in the merger. If discord be aroused, one or more of the executives with their personal following may start a competing company or accept positions with competitors. While these troubles are controllable, they have many times led to undesirable results and should be recognized for what they are.

Surface Contradictions. In giving thought to the factor of management, we should not ignore that many corporations today, whose management and organization are not of the highest grade, are, nevertheless, strongly fortified and go forward from year to year with apparently satisfactory results. This seeming controversion of the importance of good management is often nourished by returns on valuable patents, established trade names or very fortunate holdings in basic materials; or even by a policy of manufacturing and selling staple goods at a ridiculously small margin of profit. There are various wealthy corporations, owned by families or small groups, with no market for the shares and little incentive to increase dividends. In many such cases, the management is able to operate without the alertness and the urge to improve its showing, which are enjoined under different conditions.

Financial Position. If a proposed merger appears economically sound from every important angle and is assured of thoroughly capable management, the next important factor to consider is financial position. The project should have the financial facilities and the backgrounds, which will enable it to exert itself to the fullest advantage. Its capital should be adequate, its working capital ample to meet the demands of its regular business and normal expansion and provide a satisfactory ratio of current assets to current liabilities. If, in the judgment of the sponsors of the amalgamation, some major expansion is probable, it should be provided for. If the project involves the question of assuming the unproductive assets or funded debt of constituent companies the extent to which this would be wise merits serious inquiry and study. The new business ought not to be burdened with such assets, debts, commitments, and so on that would in any way jeopardize its success.

Therefore, the financial position of each company under consideration for a merger should be determined and analyzed. Excess plant and obsolete facilities should be known, so that proper treatment may be accorded them. The merchandise inventories should be valued only on a basis which will result in a reasonable and normal profit when sold. Contingent liabilities, commitments, pending litigation and any contractual liabilities should be fully ascertained. It is usually desirable to have the properties of all the companies appraised by the same appraisers, as the valuation of assets should be consistent and on a uniform basis.

Earnings. The most important financial figures are those representing the earnings for prior periods. I mean not only earnings as actually shown by the books of the individual concerns, but also earnings as they would have been under the conditions that would have existed had the concerns been

operating as constituents of the proposed merger. If after such adjustment a concern shows no earnings and is not needed for some special purpose, it is generally a poor prospect for a merger. If the earnings have been on a downward trend, the reason should be ascertained; because declining earnings alone might make a proposed participant undesirable. Any extraordinary income and expenses should be carefully considered and possibly eliminated in determining the earning power.

The ratio of earnings to asset values, particularly fixed assets, serves as a valuable guide toward ascertaining to what extent, if any, excess plant facilities or other unproductive assets are carried by the participants.

Above all, the earnings of the individual concerns should be determined on a uniform basis; that is, the same policy should apply to all of them, with respect to inventories, depreciation, salaries, reserves, and so on.

Formula or Plan of Merger. After the determining factors have been considered and the merger is felt to be desirable, a formula or plan of merger must be worked out and agreed upon. This will indicate the proportionate value of each participant's contribution and the form of compensation that each is to receive. To find the plan that will be acceptable to all participants is frequently quite difficult. There is no pattern that can be generally adhered to. The formula obviously must be fair to all, should be developed in the light of all the factors entering into the determination of the relative values, so that the resulting basis of distribution to the previous owners will be accurate and just.

The formula will naturally be influenced by immediate requirements and by the plans for the future. If it is found necessary to raise cash through sale of securities to meet the conditions under which a merger is formed, expert banking advice is needed. In fact, no merger of any consequence should be undertaken without the guidance of a competent banker. Experienced judgment is required as to the market for the flotation of securities and the type which will be attractive to the investor and sound for the newly merged company. This question gives rise to others, such as having the securities eligible for listing on recognized stock exchanges.

It is apparent that before any proper plan of merger is attempted, the needs and desires of the participants must be known. With this information as a basis, it is usually possible to evolve a plan that will meet all requirements.

Discussing the Proposition. The principals who take part in merger discussions should approach the subject with a broad and open mind. Much will be gained if the atmosphere be clear of all prejudices, preconceived opinions whether favorable or unfavorable; if the first thought of every one be simply to see the proposition clearly in its major aspects. It is essential that each participant have the vision necessary to determine the benefits of a desirable consolidation and not give undue weight to minor factors. There should be a mutual willingness to appreciate the other man's point of view. No two businesses are exactly alike, and when we add to this the justifiable pride which each one has in his own property, it is apparent that if the work of consummating a merger is not leavened by a willing spirit of give and take it may well be impossible.

There is much to be said in favor of full and frank discussion between all parties. It enables every one to become properly acquainted with the proposition, and guards against misunderstandings, or lack of understanding, which is so undesirable and which in our experience has been a serious hindrance when final negotiations are about to be consummated.

Merger discussions call for breadth of viewpoint and judgment. A study of the successful combinations of the past, of which there are so many, provides ample illustration of the vision and resourcefulness of the men who made them possible.

Special Committees. It often happens that one company in a merger movement may be represented by an able financial executive who may comprehend the financial program fully and quickly. This may not be the case with the representative of another company, who may be an executive trained more in production, engineering or sales. Frequently, the course of the meetings has been simplified by forming special committees to study and discuss the various important phases of the program, each company appointing a separate representative to serve on each of the several committees. In this manner, means are afforded whereby each company can feel that it has received the benefit of all discussions which are so necessary in arriving at a clear picture of such an important proposition as merging one business with another.

However, there is no standardized procedure. What may seem most desirable in one merger may not have application in another. But this much can be said definitely: the participants should approach a merger with an open mind, reserving any advance objections until a reasonable period has elapsed for full and frank discussion.

Importance of the Budget. To combine detached businesses and combine them well, is a great deal more than any problem in arithmetic. It is a direct challenge to the keenest kind of judgment and foresight. Working out a merger should always imply that the elements of a sound operating plan are being conceived and developed. But this general plan in the minds of its authors is only a starting point. It must be rounded out and interpreted on paper, set forth in the form of carefully prepared estimates and schedules, as a guide to accomplishment and a medium for coordination and control. The management of a newly merged business must fix responsibilities, weld sales organizations, rearrange manufacturing, establish consistency of policy; in general, put its house in order to effect the purposes and economies expected. The management will have too much to do to have its work further complicated by the lack of well-ordered plan or budget of operations and expenditures or by any necessity for guessing about day to day and month to month accomplishment.

The budget, applicable as it is in all business, is indispensable in one newly merged. Under the budget plan, the scope and responsibilities of each department are clearly defined. The spending of money is governed by appropriations based on the aims and actual needs of the business. Production and buying are coordinated with sales in an orderly way toward the accomplishment of rapid turnover and the proper regulation of inventories, while the treasury department functions in the light of a forecast of cash to be

received and obligations to be met. By no other means than through an earnest attempt to establish and operate a budget, may management so quickly come to a realization that there are deficiencies in its form of organization or personnel, because successful budgeting depends so much upon good organization.

As soon as a merger is finally agreed upon, the first thought should be "budget." Obviously, the newly merged business will not be able to prepare its budget as accurately or as much in detail, as will later be the case. But despite this, it will be valuable, and as time goes on it should develop into one of the greatest single contributions to the company's success.

International Influences. It is safe to say that very few businesses are not affected by international influences today. Since the termination of the World War, foreign markets have taken an increasing volume of American merchandise and many of our leading industries have developed extensive international relations. This is really a great problem unto itself. No large enterprise would be built on a firm rock if 50 per cent or more of its production went to one customer or to one community. It has been predicted that the time will come when a business will not be considered sound unless it includes among its customers a substantial percentage of export trade to many different countries.

The question is indeed a factor to be considered in working out mergers. It calls upon the American manufacturer to study the habits, tariffs, laws and methods of foreign peoples. It requires him to understand the differences in labor conditions, overhead expenses and cost of raw materials abroad. Without a complete understanding and a harmony of ideals, business relations in foreign fields can be no more successful than they are in domestic markets approached haphazardly. Various companies are already establishing themselves in foreign countries through subsidiary companies, representing large capital outlays and requiring complete organizations.

It seems reasonable to believe that the time is not far distant when many such companies will find it desirable to create a market abroad for their securities, so as to benefit through ownership and the simplification of banking features involved. Certain European countries will always absorb a large amount of American securities. The listing of such securities on international exchanges should facilitate transactions of this kind; may even assist in popularizing locally the products of companies so listed.

POST MERGER ECONOMICS

BY THOMAS R. JONES, *Vice President and General Manager, Harris-Seybold-Potter Company*

Delimitation of the Subject. What economic possibilities lie in a new consolidation; what inherent difficulties lie in the way of economies; what economies are effected by the very fact of a merger; and what economies may

be brought about through a merger which cannot be brought about in the several constituent companies in their independent state?

The essential characteristics of a merger or consolidation "may be taken as the central control of a number of distinct and generally scattered operating units, most of which were previously independent concerns."¹ A merger may have been formed all at once or it may have been formed piece-meal, or it may have grown from a single parent business which has branched out into new fields.

The Reasons for Mergers. In the analysis of merger economies we may gain considerable knowledge of the possibilities for economies if we inquire into the reasons for mergers. If we find out why business men merge their industries we may see whether economies have any great place in the minds of those merging. If they have not, it is unlikely that the mergers will stand much chance in effecting economies.

A. Mergers for Economies. Many mergers are formed for the express purpose of internal economies in manufacture, distribution and administration. Not all of the mergers which are proclaimed to be made because of prospective economies are made for that reason. Too many other factors control. But it must be admitted, without argument, proof, or illustration, that such mergers do exist in substantial numbers.

B. Bad Conditions of Distribution. Greater than the factor of internal economy is that of elimination of bad merchandising conditions as a motivating force for mergers. An outstanding and successful merger of this type was one that took place in the paint industry. This particular industry was sectionalized, and highly competitive. The conditions may be pictured by the fact that this consolidation combined nearly fifty of these independent companies. All of the constituent companies retained their identities. Over a long transition period the individual trade-marks were changed gradually to one now nationally known. The major thought of this consolidation was not to combine plants, get quantity production and eliminate executive personnel but rather through the control obtained of the industry, indifferent average profits were transformed into earnings of fourteen per cent on the common stock.

A certain company in the machinery field paid five million dollars for a competitor which it once could have purchased for ten per cent of the amount and expected to lose in operating efficiency by doing it. The expected gain was not the possibility of a monopoly or even of economies—but to clean up a bad credit condition in the trade.

A survey by the National Association of Manufacturers showed that 79 per cent of 850 members regard price cutting as their major problem.

Charles F. Abbott, executive director, American Institute of Steel Construction, declares that lack of profits is caused chiefly by inefficient distribution methods that involve unfair, unethical practices; that anti-trust laws, in forbidding intelligent cooperation among business concerns, have expedited the formation of huge mergers, whose influence is to reduce competition.

¹ "Mergers in Industry," National Industrial Conference Board, New York, 1929.

Gordon C. Corbaley, president of the American Institute of Food Distribution, believes that the attitude of the Department of Justice toward the attempts of industry to put its house in order is unfortunate; that manufacturers must be permitted to control excess productive capacity in order to eliminate the destructive competition which he also sees as forcing concerns into huge consolidations.

Some mergers are forced through the necessity of controlling conditions of dealer distribution which have become unbearable. Some lines of men's clothing are now being sold through factory controlled retail stores. The history is this: Exclusive dealer agents became more and more exacting in demands. Prices, discounts, and terms were dictated under penalty of losing an outlet. Serious inroads were being made into the manufacturer's profits. The manufacturer bought some stores and started a chain to control his own outlets.

C. Smoothing of Sales and Production Variations. In businesses of highly seasonal character it is advisable to take on additional seasonal production but to choose the product so that the peaks of the one offset the valleys of the other.

The necessity of smoothing out sales peaks and valleys brings about strange combinations. The wedding of radio and mechanical refrigeration in several of our nationally known companies is probably the acme of such miscegenation.

D. Technical. A reason for merging which we rarely see advanced but which is primary and vital is that of increased possibilities for research. The whole case is stated in a clipping which I will quote verbatim:

First importance of chemical research in the synthetic textile fibre industry is shown in the merger of Tubize Artificial Silk Company of America with the American Chatillon Corporation, now being completed. *Consolidation is primarily to make possible more extensive research*, it also places under one head manufacture by three of the four chief processes now in use, and gives a spread and diversification in products not previously had by either company.

Textile and chemical engineers point out that the artificial silk industry is youthful and in a state of flux. A small army is engaged constantly in research to discover new methods of improving the fibre. Under such conditions, the research laboratory becomes the mainstay of the manufacturer who would not be swept out of business overnight. The small producer, with limited resources, is under a severe handicap. Hence mergers of this type, principally for research purposes, are inevitable.¹

Results in product development by General Motors Corporation with its General Motors Research Corporation and by the American Bell Telephone Company with its Bell Telephone Laboratories lay outstanding emphasis to this merger advantage.

A big match company forms an interesting example of another reason for merging—the utilization of byproducts. This company is not a true merger. It is a growth. It originally made only matches. Because it had

¹ *The Business Week*, May 7, 1930.

surplus lumber, the company established 40 lumber yards. This put it into the building supply business. Some of the lumber still left on its hands it started to make into toys and beehives. Beehives sell better with other bee supplies, so now the company is in the apiary business too. In an endeavor to produce an income from one of its cleared lumber tracts, it planted prunes, which put it also into the fruit business.

Du Pont similarly branched out. Duco, Rayon, Cellophane are all familiar trade names of products whose manufacture is based on gun cotton.

E. Management. A highly legitimate purpose in consolidation is that of making available a quality of management not to be afforded by a smaller company. In my opinion no company is too small for good management and I do not admit that good management is an economy available only in size. However, if good management is lacking and it can be made available by a merger, the merger is advisable.

We can scarcely imagine any economies resulting from a combination of soap, shoe polish and salad dressing. The Gold Dust merger was such a combination and in it were no economies of merging—a fact which its management admits. But there were economies in management. For example, one of the merged companies had an office of three floors of high rent space with four hundred clerks. These offices were closed, one floor was taken in a more reasonable part of town,—two hundred fifty clerks with several high salaried executives were removed. Without increasing the business, the business in this manner was made to yield a profit.

F. Personal. Probably the greatest, though least mentioned, reasons for mergers is the desire of executives to be big,—the desire to have increased opportunities against which they may measure their stature. The wish to beat the other fellow and the wish not to be out-classed are manifestations of this feeling. One who doubts that this factor is a big one in business, should recall the recent contests between various large New York corporations to have the tallest building in the world regardless of economies or costs.

Industrial mergers made for personal reasons may be unbalanced; may contain units having no relation to the whole.

G. Financing. Many mergers are pure promotional schemes—excuses for a stock-jobbing operation. A similar but more legitimate purpose is that of the attainment of sufficient size through combination to get a listing on some exchange and thereby create a broader market for corporate stock.

Diversification of product lends a valuable financial feature to a merger and often sufficient excuse for one. In my own company the profits of one division will often carry us through the losses of another. Total profits need be no greater but the fluctuations of the profit curve can be less violent. Profitable divisions of a company can put another division on its feet or carry it through a price war. New developments and new enterprises can be carried through to maturity by the momentum of unrelated and healthy divisions.

H. Miscellaneous. Fear is responsible for many a business merger.

In a town of 31,000 population there were four banks. Two of these banks suddenly merged. The other two banks—heretofore aloof competitors—through fear of possible consequences patched up their differences and came together.

In a certain equipment field there was a company doing about \$20,000,000 of business per year. It had almost a monopoly of a portion of the field and other companies in the remainder of the field were content to let matters rest. Suddenly the one company purchased a small and failing company doing a business in the remainder of the field. Because of fear of the intentions of this one company, three companies which heretofore had been at sword's points, came just as suddenly together and the one company had pulled the house down about its ears.

Some mergers are forced by the general trend of mergers and bigger business units. Outstanding examples of this may be seen in the realm of banking. Big businesses require big banking connections and the risks involved in small banks through carrying big business accounts are out of proportion to their abilities. This is one reason for bank consolidations.

If we scan carefully these many reasons for mergers, we will see that very few of the reasons have to do with internal economies. And if we will think carefully over many of the mergers we have known we will realize that they could not have come about because of large expected economies. If we study most of the results we will see that, if the economies of the merging were expected to show in greatly increased profits, something has happened either to the economies or to the expectations.

Please bear in mind that I distinguish between internal economies and external or trade economies which might be made through trade agreements. Moreover I distinguish between economies possible only through mergers and economies arising purely from management methods which could have been applied equally well to the constituent companies in their independent state.

Mergers Do Not Necessarily Bring Economies. There is a popular opinion current to the effect that all that a business has to do to increase profits is to become a part of a merger. This even goes to the point of believing that a group of red ink businesses can be put on a paying basis by merely merging them.

How can an overgrown industry avoid a shrinkage or a loss by the simple process of merging the units of the industry? Or how can one add two and two and two and get an answer less than six? Mergers *per se* do not nullify economic law; they do not change one whit the elements of mathematics; they do not do the impossible, despite the popular opinions to the contrary.

The National Industrial Conference Board made a study of forty-eight successful consolidations over a period of fifteen years. Only those corporations were included which were organized through an amalgamation of several theretofore independent and competing concerns, only those corporations whose fields of operation were national in scope were included and only those corporations were included on which information was adequate for at least ten years. Forty contemporary similar consolidations which went into bankruptcy or were forced into financial reorganization were cited.

The forty-eight successful organizations showed that (1) their rates of earnings on capital and surplus did not increase subsequent to the consolidations, in fact, over a period of fifteen years, they actually decreased slightly; (2) the rates of earnings were not as much as would be expected from any well managed independent; and (3) the variations and earnings resulting from

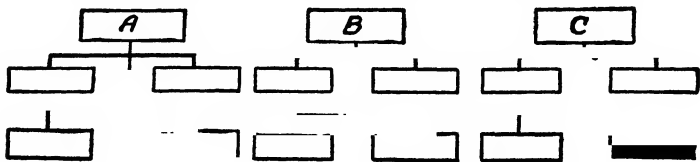
the fluctuations of the business cycle were comparable with the fluctuations of general business.

As a result of these and other findings the research staff of the board concluded:

First, when whole industries have been subject to stagnation, the mergers have been unable to escape the prevalent drift toward ruin. On the other hand, the abnormal growth of new industries has provided such a favorable situation for business enterprises that the mergers have participated in the general prosperity. In the second place, industrial consolidations have not been able to avoid sharp decreases of profits in years of general business depression. They have been affected like other enterprises by the falling off of the demand for their products resulting from business maladjustment. Third, when the consolidations have been handicapped by an unmanageable financial structure, which subjected them to fixed charges above their minimum earning capacity, they have been unable to adapt themselves to new situations or to take advantage of new opportunities and have thus forfeited their industrial leadership. Finally, and this is the most significant conclusion to which the data surveyed point, business mergers offer no substitute for competent management. Consolidations are as dependent as other business concerns upon the sound business judgment and clear foresight of their executive management. Certainly it is not too much to say that the combination movement has not "discovered" a royal road to profits. It has not introduced a revolutionary principle of business organization, which renders antiquated all the alternative expedients for controlling the direction and pace of industrial operations. It has not provided an instrument for profit-making so effective simply from its own structural characteristics as to emancipate business executives from the necessity of cultivating those traditional requisites of success in industry: prudent investment, sagacious management and technical ingenuity.¹

Reasons Why Mergers Tend to Be Uneconomical in Operation. Merging, as such, not only does not guarantee economies but the merger brings about some conditions which, if not combated wisely and vigorously, will work in exactly the opposite direction.

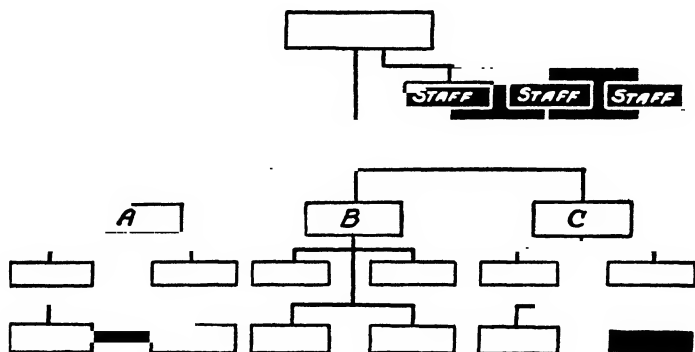
Let us assume a merger which will not permit of plant and organizational consolidation. We will assume that the organizations of the constituent companies are efficient and not top-heavy. Here are our organization charts:



Now under the consolidation, if the red-tape-delays and general mismanagement incident to centralized control are to be avoided, it will be necessary to maintain a complete organization at each company. If the former organ-

¹ "Mergers in Industry," National Industrial Conference Board, New York, 1929.

izations were efficient and at a minimum for pre-merger purposes then the fact of a merger will not reduce them. But it will be necessary to have a super organization for the control of the merger. The organization chart will now look like this:



And the men in this added and superimposed organization receive far higher salaries than those in the lower strata and it will take considerable and drastic economies to offset the heavy super overhead.

Furthermore, the directing heads are farther away from their operating problems than were the former heads of the constituent companies and this is a fact which will need some offsetting economies.

A merger is apt to precipitate a decided *let-down in morale in the second stratum of executives* in the constituent companies. Those who have done mountain climbing will remember how, after the first seven or eight hours of climbing, one feels that he is nearing the top and fastens his eyes on a peak ahead, certain that that is the goal. Another hour of muscle-torturing and lung-racking climbing and he reaches this objective to find that the peak is only a shoulder on the route. Three of these disappointments in as many hours have stopped many a climber and turned him back before his goal was reached. This same effect is had when additional organizational peaks loom ahead of the executive who finds that the peak toward which he had been aiming turns out to be a shoulder.

A drop in morale is not necessarily confined to the secondary executives. Owners and active officers in a successful business are apt to feel that a merger ends their troubles, that they may sit back and let some one else assume their burdens.

Mergers are apt to bring about the committee form of government. This may be disastrous. I cannot point to a single large business, started from scratch and built to a position of dominance which was brought through by a committee system. Some one must have the final say,—the sole responsibility.

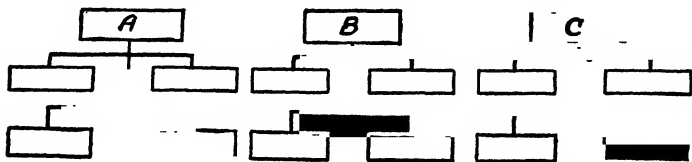
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Reasons Why Mergers Tend to Be Uneconomical in Operation. Merging, as such, not only does not guarantee economies but the merger brings about some conditions which, if not combated wisely and vigorously, will work in exactly the opposite direction.

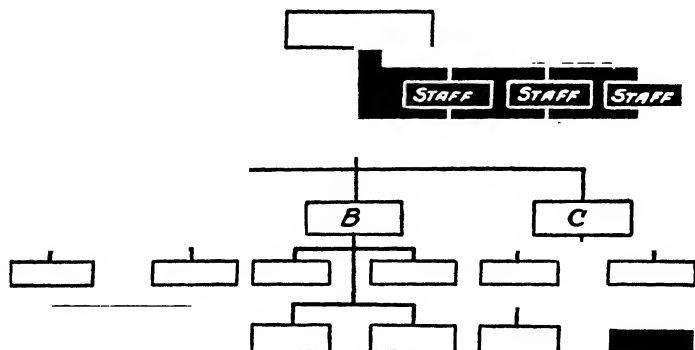
Let us assume a merger which will not permit of plant and organizational consolidation. We will assume that the organizations of the constituent companies are efficient and not top-heavy. Here are our organization charts:



Now under the consolidation, if the red-tape-delays and general mismanagement incident to centralized control are to be avoided, it will be necessary to maintain a complete organization at each company. If the former organ-

¹ "Mergers in Industry," National Industrial Conference Board, New York, 1929.

izations were efficient and at a minimum for pre-merger purposes then the fact of a merger will not reduce them. But it will be necessary to have a super organization for the control of the merger. The organization chart will now look like this:



And the men in this added and superimposed organization receive far higher salaries than those in the lower strata and it will take considerable and drastic economies to offset the heavy super overhead.

Furthermore, the directing heads are farther away from their operating problems than were the former heads of the constituent companies and this is a fact which will need some offsetting economies.

A merger is apt to precipitate a decided *let-down in morale in the second stratum of executives* in the constituent companies. Those who have done mountain climbing will remember how, after the first seven or eight hours of climbing, one feels that he is nearing the top and fastens his eyes on a peak ahead, certain that that is the goal. Another hour of muscle-torturing and lung-racking climbing and he reaches this objective to find that the peak is only a shoulder on the route. Three of these disappointments in as many hours have stopped many a climber and turned him back before his goal was reached. This same effect is had when additional organizational peaks loom ahead of the executive who finds that the peak toward which he had been aiming turns out to be a shoulder.

A drop in morale is not necessarily confined to the secondary executives. Owners and active officers in a successful business are apt to feel that a merger ends their troubles, that they may sit back and let some one else assume their burdens.

Mergers are apt to bring about the committee form of government. This may be disastrous. I cannot point to a single large business, started from scratch and built to a position of dominance which was brought through by a committee system. Some one must have the final say,—the sole responsibility,

A merger causes a *shifting of jobs*, the placing of men into work with which they are unfamiliar. In the changing of jobs, and the mingling of the personnel of the unit organizations, there are bound to be many unpleasant personal contacts. Extremely cautious and skillful guidance is necessary on the part of the chief executive in order to avoid the losses due to these eddy currents.

Administrative economies are often foremost in the claims made by the promoters of a merger. Yet these advantages frequently prove fallacious. It is true that when several rather small units are brought together through a merger administrative economies are usually possible. When a vertical merger is arranged surely all administrative expense connected with the buying and selling departments of the intermediate links in the chain may be eliminated.

Generally speaking, however, too much has been expected in the way of cutting down administrative overhead. Of course if poorly managed businesses are brought together the same efficiencies as would have been possible anyway should be made effective. But the hope of cutting down markedly on the general clerical force usually proves to be poor economy when more carefully studied. And the salaries and perquisites of the managing executives can rarely be reduced without a marked lowering of executive morale.

It has proven to be the rule rather than exception, however, if my information is correct, that when well managed units are brought together into a well conceived and properly controlled combination the administrative expense is increased rather than lessened, due to the need of additional compensation for men who are being given heavier tasks and due to the need of more elaborate accounting and statistical control operations by which the larger operations of the combination must be appraised.¹

Add to the above the necessity in many mergers of providing policy jobs for some of the heavy stockholders in order to get their consents to the merger and we can see that the personnel factor looms large as a rock on which the merger ship may become wrecked.

Losses Incident to Effecting Economies. *A. Drop in Total Sales.* One aftermath of the merger of companies making identical products always seems to give the management extreme surprise and pain,—this is the fact that the sales of the merged company, unless some unusual factor intervenes, are always less than the sum of the sales of the independent companies before merging. This is logical when one stops to think of it. There are always some customers of one company that are customers because they do not like some other company. In the case of a merger these customers of both companies are liable to go to competitors. One company which purchased a second estimated a 30 per cent decrease in sales of the purchased company and so far their estimate seems to be about correct. Another reason for a drop in sales is that in an attempt to economize on selling expense insufficient attention is given to the proper balancing of the sales force. One company which produces mechanical equipment purchased another company which made a different equipment for the same purpose. The first company was in control of the consolidation and, to realize sales and engineering

¹ VISSCHER, O. W., "Some of the Conditions Which are Bringing Forth Mergers," General Management Series, No. 103, American Management Association, 1929.

economies, released practically all of the salesmen and engineers of the purchased company. The management did not stop to think that their own salesmen and engineers were schooled to their own product and naturally felt it superior to anything else on the market. The results were that the sales of the purchased organization after two years had dropped so that the total sales were only slightly in excess of the sales of the first company before the purchase. Only drastic action and reorganization by a new management started the combination in the proper direction.

Much in selling is a result of the personality of the salesman. Consequently a salesman usually carries some of his customers with him. A group of salesmen, released in the interest of economy and hired by competition will also affect the total sales.

B. Excess of Assets. C. New Investment and Moving Expense. A consolidation of three companies for various reasons failed to make, by 50 per cent, profits which were made by the constituent companies previous to the merger. One of the factors had to do with excess plant capacity and a wide separation of plants and consequent lack of effective control. It was deemed necessary to consolidate plant operations in order to get all of the economies that were possible. To do this involved a write-off of \$700,000 from the assets as the abandoned plant was in a location where it could not be sold for its book value and an expenditure of \$190,000 for additional plant and for moving. The plant write-off amounted to 10 per cent of the total assets and approximately 30 per cent of the net worth. The expenditure was deemed advisable because it would be returned in savings in a very short time and the company decided it would rather have earnings than book assets.

In order to realize the savings possible from another merger it was necessary to abandon completely one foundry, build an entire new one and revise an antiquated power plant at a total expenditure of over \$1,000,000. While the entire expenditure was returned in two years, the process of going through such an outlay was necessarily nerve racking.

A company purchased and merged other allied companies from time to time. It thought that it could economize through making one product or a part of one product in each plant and thus get greater quantities to work on and reduce manufacturing costs. It had a foundry in which it concentrated its castings. All plans were carried out as scheduled but when the end of each year rolled around profits failed to appear. Why? Sales were maintained, but it was found that each plant had about as much overhead as it had had before, a large administrative overhead had grown up and the trucking charges between plants were unexpectedly high. There was but one answer. The firm built a very large new plant, abandoned all of its old plants, made one overhead grow where several had grown before, eliminated the interplant trucking, bought new equipment and in 1929 after writing off all moving expense made a profit of \$300,000.

The prosperous coal companies know that if they purchase less prosperous ones economy will demand that the less efficient mines be shut down. This will mean a direct write-off of assets or a considerably decreased percentage of earnings on the investment and the coal companies do not see why they should play angel to this extent.

D. Inadequate or Top-heavy Organization. Some economic chickens counted before they are hatched are those of the possible savings through centralization of administration. There is a limit to which centralization can go and beyond this a centralized organization becomes unwieldy. Emphasis was given to this by a large grocery chain which was forced to dissolve its central control into district controls to the consternation of some five hundred employees in the central office. In the reorganization the general office is practically eliminated. The branch managers will buy as well as sell. Even accounting is decentralized in this swing of the pendulum.

Another case involved the sales, engineering and production divisions of a company. In 1921 to 1922, during the postwar slump, the machine-tool industry was especially hard hit due, not only to the large excess capacities resulting from the war work, but also to the large amount of excess equipment on the second-hand market—most of it nearly new. The situation was disheartening and, to help to fill a very empty plant, one manufacturer looked about for additional products. He purchased a flourishing, though small, business which made and sold a machine tool, though one requiring an entirely different design, sales method and technique. In order to realize the economies desired and to help absorb an excessive overhead in his own plant, this manufacturer eliminated practically the entire overhead from the purchased company, and retained only five or six people.

Matters dragged along, and for some reason the new division of the business did not flourish. Sales lagged. Complaints came in from the field. The product gained the reputation among customers of being third rate in contrast to the first place held by the standard product. Despite the reduced overhead, every machine shipped took with it part of the profits of the standard line.

The management became desperate and finally decided on desperate measures. A plant was purchased, an experienced engineer was brought in from the outside, a brand new organization was built up and the two products—of similar nature, sold through the same channels and to the same customers—were made and sold as though owned by separate corporations except that general policies were the same. Within two years the new product was the leader in its field, sales rivaled those of the old product and profits exceeded those of the parent company. But not one cent was saved in overhead, in fact, it was nearly doubled.

E. Development Expense Necessary to the Realization of Engineering and Manufacturing Savings. One of the large savings which can be made in similar products is that of standardization of parts because of the various sizes and varieties of product so that while a large variety of product may be made, parts may still be made in quantities. Here again is a heavy initial cost of realization. The engineering and development, new patterns, jigs, etc., incidental to such a program are extremely expensive.

Possibilities for plant consolidations loom large in many prospective mergers. Possibilities of rearrangement of production so that merged factories may specialize on one or a few products also form desirable sources of savings. But not all is rosy. Product, machinery, patterns, and parts must be moved; plants must be replanned; organizations must be trained to new

products; redesign for standardization with all of the changes in patterns, tools, and layout which accompany redesign.

The cost of these changes compared to the profits of the first two or three years of a merger or to the economies which may result are oft times startling.

F. The Problem of Excess Personnel. A serious problem which the management of a merger has to deal with is that of surplus personnel. The most outstanding example of the intelligent handling of such a condition is that of the U. S. Rubber Company.

One may be faced with the problem of releasing a group of approximately two hundred fifty men, some of whom have been with the company for as long as forty-three years. The process of going through such a move is extremely nerve-racking. Judged from a purely humanitarian angle it is unfair to the people released. Some people seem to feel that the employees of a purchased company demand no more consideration than the victors in ancient warfare accorded the captured enemy. But a new management assumes the responsibilities of the old management, and from the standpoint of the employees the new management is merely a phase of a continuous phenomenon and not a change of employment. Age of service demands consideration and it may take an additional cash outlay to discharge the obligations to affected personnel.

G. Excess Financial Structure. Several elements lend to an excessive financial structure. Prices paid for the various businesses entering a merger may be based on the earnings of peak years which may be mistaken to indicate a trend. The owners of the constituent companies may each hold out for an advantage with the result that the total capital structure of the consolidation is too high. Adjustments of stock values in arriving at figures for interchange of security values usually trend upwards instead of downwards. Excessive promotion profits, commissions, and bonuses water the capital structure. Also all of the weaknesses of each independent company are added together and, if there are any inherent weaknesses in the merger, the total will assume larger proportions. W. R. Angell, vice president of Continental Motors, has drawn this picture for us:

If several successful independent companies are merged on the usual formula, the public purchasing the new shares pays an enormous price for duplicated good will, duplicated dealer organizations, and duplicated plant capacity, machine tools, inventories, dies, designs, etc., all appraised at reproductive values. These burdens, loaded upon the shoulders of the new company, generally more than offset the advantages hoped to be gained through unification of effort.

H. General Comments. The first two or three years of a merger are the hardest, and those who are proposing mergers for the purpose of economies must look this fact coldly and fearlessly in the face.

Heavy outlays of cash are made to make possible the realizable savings, drastic write-offs in fixed assets; organizations must be carefully welded together, guided and directed; it may be necessary to suspend dividends and profits may show at a very disappointing figure. The heavy and courageous write-offs of assets necessary to realize consolidation economies in the first year or two of a merger, suspension of dividends and reduced profits are more

than most new managements wish to shoulder responsibility for. The alternative is to carry dead assets on the books and decide to show low earning percentages with no justification for additional expenditure or no profits until the abandoned assets have been completely written off.

Prospectuses gotten out by financial houses show possibilities for increased earnings through mergers but I have yet to see a prospectus which brought out the amount of punishment which the management and stockholders first must take if these savings are to be realized.

Economies to Be Realized through Merging. Lest what has gone before will lead to the assumption that consolidations are unprofitable and undesirable things, let us look for a few minutes on the other side of the picture. We have been talking largely about internal economies, but mergers can be profitable without internal economies as I have already shown in several cases. They can be profitable because of management possibilities and they can be profitable in many instances because the merger itself will afford economies which are not otherwise possible.

Production Economies. A. Identical Products. Where companies making identical products have merged the first and most obvious saving is that available through plant consolidation. Plant consolidation alone is insufficient. This should be followed by the elimination of product variety which will involve a large amount of redesigning. It should also include standardization of product leading to a maximum of interchangeability of parts and units. If the foregoing recommendations are impossible and it is necessary to make two complete lines of product, although this condition is rare, it is possible that large overhead savings will be precluded by the complication of shop system, the consequent possibility of delays and the increased production control organization necessary. Also, such a consolidation will often result in the necessity of a new shop layout.

B. Similar Products. Where similar but not identical products are involved in a merger, plant consolidation will reach maximum effectiveness only if the parallel products are redesigned so that they can use interchangeable parts and units. In many cases because of complications arising through plant consolidation it is advisable to carry out a program of plant specialization. In this case one plant may be made to make one portion of the product while another makes the remainder and does the assembling. For example, two companies manufacturing different types of printing presses might make all of the press feeders in one plant and all of the printing mechanism in another. Such a program of specialization involves a relay-out of the two plants and the moving of machinery and equipment.

C. Unlike Products. Mergers of manufacturing plants manufacturing unlike products present great difficulties in realization of manufacturing savings. Sometimes waste products of one plant may be used as raw material in another. In the case of a vertical merger, obvious savings may be made in reciprocal adaptations of product to the end of mutually reduced costs.

D. General. In many cases of consolidation of production there are always some possibilities of the consolidation of indirect functions. One executive, for example, may direct several production planning divisions. Consolidation of equipment also represents a source of savings in the event of

plant consolidation, as partially idle equipment in one plant can often be put to continuous usage on combined products. Plant consolidation should not overlook the possibility of availing itself of the cheapest labor, least taxes, and best transportation conditions. In any case, one should advance the warning to beware of too much centralization. This is the rock which has sunk many a ship in the sea of red tape.

Administration Economies. Ofttimes savings can be made in the administrative end of the business. However, the administrative field is not always the prolific source of savings that it is expected to be. This I have pointed out elsewhere. The advantages in the administrative end are often the intangible ones. Diversification of product leading to greater stability of business, the possibility of more intensive research and the advantages gained through savings, such as flexibility and the possibility of carrying through development programs, and the advantages of quantity purchases usually mean more than the savings due to direct cuts in administrative overhead.

Sales Economies. Savings in the sales departments are apt to be small. Savings having to do with sales usually come through the stabilization which may be obtained in the industry in general and the elimination of price cutting and long-term credits. The possibility of leveling sales peaks is not to be overlooked. Ofttimes a consolidation is necessary to get the proper control of dealer and jobber outlay. However, this is something to be undertaken with a good deal of prayer for the reason that it is difficult to control permanently any outside organization, without enlarging the opportunities for a small or new competitor. The possibility of price fixing through a merger is apt to have boomerang tendencies. There are very few mergers which in the past have attempted price cutting and were permanent successes without a drastic change in policy.

Management, the All-important Consideration in Merging. The merger with its large size, and diversified ownership, will develop the demand for the professional manager in contrast to the owner manager of the independent company. And, as before brought out, scarcity of supermanagerial brains may, in itself, be sufficient justification for a merger.

George K. Morrow, manager of the United Cigar Stores makes this statement:¹

There do not have to be any "economies of merging." The only need is that a company be given a business management. The latter doesn't have to have any relationship to the first, either in product or market. What we give them all are economies which most people haven't the courage or knowledge to put through.

A large machine-tool consolidation of many years standing was having but indifferent success. One division in particular was losing \$100,000 to \$125,000 every year. This division was sold to another company—a company which made heavy machinery and knew very little about machine tools. Under the management of the new owners this division produced a profit of \$600,000 the second year of the new control. Some of the economies made in this case could not have been brought about without a merger but the first merger without management failed to produce them.

¹ *Business Week*, May 7, 1930.

An Example. Now that we have gone this far it might be well to see how all of the factors which have been discussed have applied to a representative merger. The one that I have chosen for presentation is a very large company; the name and reputation is widely known. Every factor which can be favorable to a merger has operated in this case. The management is of the best. The board of directors consists of more than a score of men nationally known as keen business men. The industry in which it operates is basically sound. Competition is keen but high class and fair. The products of the company are diversified over the entire field in which it is operating. It is the largest company in the field, but it has no line of product which does not meet with keen competition from a competitor. Some twenty-seven companies not including more than twenty sales subsidiaries are represented in the merger. The conditions under which the final merger was brought about and consummated were about as favorable as ever attained in the case of mergers. In the face of all these facts let us see what has been accomplished in the first three years of consolidation.

There were originally thirty-five manufacturing plants. This has been reduced to twenty-seven which is a total reduction of 23 per cent. In making these accommodations the consolidation was wholly made in the direction in which labor was cheaper and other manufacturing economies could be effected. The number of factory employees has been reduced 15 per cent in the face of an increase of 15 per cent in factory output. The number of branch sales offices has been reduced from 550 to 250 with a wider representation than was had by the constituent companies.

Here is a significant fact which bears out some previous statements. In spite of the reduction of over 50 per cent in the branch offices, sales forces were not reduced by one man although they were reorganized. Duplication of departments was eliminated; the accounting and executive personnel alone were reduced by more than three hundred; all engineering departments and development laboratories were consolidated. Office forces were reorganized; factory readjustments made and all obsolete equipment abandoned. Within this period of time it is felt that most of the merger economies have been realized although there are probably considerable economies yet to come.

We would consider that with these indications of a vigorous and intelligent management profits would have been greatly increased. What actually happened is this: In the year immediately subsequent to the merger profits were cut in two. During the last fiscal year, which was pronounced by all competitors as being exceptionally good in which all reported record-breaking earnings, the earnings of this consolidation were about equal to what they were in total for the constituent companies in the year previous to the consolidation. During this time the total financial position is not greatly altered. By this we mean that the current ratio has remained practically constant as did the net worth. Dividends were paid on the preferred stock but only one dividend was paid on the common, although the directors believed that the company was on a permanent dividend paying basis. Total surplus accounts remained constant in spite of the fact that all earnings possible were plowed back into the business. A detailed examination of the financial statement will show considerable advances made in that some of the capital structure

has been reduced. It is rather significant that twenty-five per cent of the total assets is goodwill and patents. The company has a very heavy financial structure, which is many times the case with mergers.

It is patent that the foregoing example shows very clearly that merging does not automatically mean economies. As I studied the report on which these figures are based I had a deep sympathy for the long hours and hard work put in by the management in bringing this organization under control.

Of course this study is somewhat unfair to mergers in general in that it does not cover a sufficient period of time. I believe that this company is going to show decided profits in the future, and that these profits will arise out of economies. However, I am not at all convinced that the economies could not have been effected in constituent companies.

Summary. In summary let us keep three things in mind. First, the subject of this paper implies a consideration of internal economies through merging; second, there is a distinction between external and internal advantages and economies in merging, both of which may lead to more profits; third, there is a distinction between economies which are made as a direct result of a merger—which could not have been made in the constituent companies in their independent condition—and the economies realized through a merger because of improved management—management which could have been applied to the independent companies.

It is by no means a general rule that mergers make big earnings; many of them do not make even the sum of the earnings of constituent companies; many mergers are made with no thought of economies arising from the merger *per se*; there are many forces in a consolidation which militate against economies or which tend to create losses which offset economies; a well-designed merger achieved under certain proper conditions can make more money than the unmerged independents; but merging is not a substitute for management, and management is the first and most important consideration.

Not one thing which has been said must be construed to decry all mergers. I merely point out and emphasize that, from the viewpoints of the management and economics not all is gold that merges.

Mergers will continue as long as the ambition of man continues. Mergers have justified themselves beyond all doubt when carefully and impersonally designed. The size of mergers will be limited only by the limits of man to control them and we have not reached that limit yet.

A merger should be more than an ill-advised monument to a man's ambition or a mere stock-jobbing proposition.

A consolidation, to justify its existence as a consolidation, should accomplish things which were impossible to accomplish in the independent businesses of which it was constituted. It must produce:

1. A better product at the same price or the same product at a lesser price.
2. More stability in the industry.
3. More profit for the investors.
4. Greater advance in the industry.

and, if it is successful it will have been made up of a grouping of successful businesses on a sound and conservative capitalisation, with adequate resources, competent personnel, and *will have been based on management.*

CHAPTER VIII

DEPRECIATION AND OBSOLESCENCE¹

BY HAROLD VINTON COES, *Manager, Industrial Department, Ford, Bacon and Davis, Inc.*

Webster defines depreciation as "the act or state of lessening worth." According to this definition all lessening of worth, whether due to age, wear and tear, lack of proper maintenance, decrepitude, inadequacy, or obsolescence, can be termed depreciation.

H. A. Foster, in "Engineering Valuation of Public Utilities and Factories," states that

. . . at the time of an appraisal all these forms of lessening value have to be given consideration as depreciation, but from an accounting standpoint, depreciation is only that deterioration of an object that cannot be made good by repairs, but requires a complete renewal. Obsolescence, inadequacy, and supersession, being speculative and prospective, play no part in this form of depreciation, and all other deterioration is to be made good by maintenance and is so charged on the books.

The Illinois Manufacturers' Costs Association makes this statement with regard to depreciation:

Depreciation is due to possession and use; it is a decline in the value of all fixed assets—land excepted—and impairment of capital which is certain to occur as a result of deterioration through lapse of time, wear and tear, or obsolescence.

The main purpose of the depreciation charge is not to show values on the balance sheet, but to apportion to the several accounting periods the net outlay of capital represented in the assets that are being depreciated. This actual charge may leave an amount having little relation to the physical valuation of the assets at a particular date and to one interested only in valuations the charge may seem a fiction, but successful business management has found it to be the only safe and sound principle to follow.

Definition: Brief definitions of some of the terms just referred to may help us to a clearer understanding of the subject.

Decrepitude. An article, building, equipment, tool, fixture, or the like may become so old and worn that new parts can no longer be retained in place by the original body, and hence the cost of maintenance becomes so high that it is cheaper to replace the article.

¹ Reprinted by permission from *Mechanical Engineering*, vol. 51, pp. 342-344, May, 1929.

Supersession or Inadequacy. Foster defines this as "that lessening in value which takes place by reason of the growth of business, rendering apparatus inadequate for its purpose and compelling the installation of machinery capable of greater output of capacity."

Obsolescence. This is usually that lessening in worth which is brought about by developments, inventions, and changes in the art that render a plant, any part of its equipment, or whole sections of it, uneconomical of use as compared with newer types available of greater efficiency.

The Century Dictionary defines obsolescence as "going out of use," which definition represents a falling off in the value of usefulness of a thing from causes outside of the thing itself as distinguished from the effect of wear or physical deterioration.

Wear and Tear. This form of depreciation and the one regularly recognized in accounting practice is that due to the elements, to abrasion, accidents, accelerated usage, and the like. Roofs can be repaired, glass replaced, new bearings installed, slides planed down, and bushings replaced; and such deterioration and its correction through replacement is usually charged to operating expenses. Experience has shown that where obsolescence has not set in or is operating, and facilities are kept in reasonably good operating condition for the work that they are called upon regularly to perform, they are then maintained at from 80 per cent to 85 per cent of their original functioning condition. There are buildings in Europe that are in good condition, yet several hundred years old. We, all of us, have seen Corliss engines in operation over fifty years old. Some kinds of standard equipment, such as certain types of machine tools and textile equipment, are still good today, in many instances, for the purposes for which they are used, even though they may be forty to fifty or more years old. Some of these facilities actually depreciate very little from age, use, and wear and tear, yet they have to be replaced on account of obsolescence rather than from decrepitude or wear and tear.

The Federal Income Tax Regulations state:

The necessity for a depreciation allowance arises from the fact that certain property used in the business gradually approaches a point where its usefulness is exhausted. In the case of tangible property it applies to that which is subject to wear and tear, to decay, or decline from natural sources, to exhaustion and to obsolescence due to the normal progress of the art, as where machinery or other property must be replaced by a new invention, or due to the inadequacy of the property to the growing needs of the business.

Obsolescence. With respect to physical property, the whole or any portion of which is clearly shown by the taxpayer as being affected by economic conditions that will result in its being abandoned at a future date, prior to the end of its normal useful life so that depreciation deductions alone are insufficient to return the cost (or other basis) at the end of the economic term of usefulness, a reasonable deduction for obsolescence, in addition to depreciation, may be allowed in accordance with the facts obtaining with respect to each item of property . . .

Deterioration and Obsolescence the Two Prime Factors of Depreciation. Depreciation, then, is made up of two prime factors, deterioration and obsolescence, and they do not run concurrently in any given case, for which-

ever of the two is operating the faster, governs. A given type of standard machine tool may last fifty years at its present usage rate before it can be no longer commercially repaired. That would be depreciation at the rate of 2 per cent a year. It may, however, become obsolete two years after it is purchased for the purpose for which it was secured, and the rate, if such it can be called, would be 50 per cent a year.

No Accurate Rate of Depreciation Determinable. Accounting practice requires a rate for depreciation in order to show the depreciated value of the assets on the balance sheet and in the accounts of the business, and yet it is well recognized that there may not be any close connection, as stated by Dicksee, an accounting authority, between the intrinsic value of capital assets at any given moment and the depreciated value at which they appear in the books of account. Depreciation rates, however, are estimates only, and by the very nature of the many variable factors these rates must be set arbitrarily, so it can be said at the outset that there is no such thing as an accurate rate of depreciation. Climate, location, usage, care, promptness in the character of the repairs, the original quality of the article, and its condition at the time of acquisition, all have a bearing on the ultimate life, obsolescence excepted. These factors all compound in different proportions under given conditions. Since there is not a sufficient amount of data for any given article, under diverse conditions, to be able to treat the subject on an actuarial basis, the accrued depreciation must be the best estimate of those best qualified by experience and judgment to establish it.

Obsolescence is a form of depreciation that infrequently can be accurately estimated in advance of its definite occurrence. Confused thinking on the part of accountants, engineers, and the taxing bodies has rendered it difficult for executives to consider intelligently the problems incident to it and to provide some means for financing those operations that are suddenly required by reason of the immediate occurrence of obsolescence.

The Illinois Manufacturers' Costs Association, in its pamphlet on depreciation, has this to say about obsolescence:

Obsolescence is recognized as the most difficult element to determine, pertaining to the depreciation charge. In its determination, management not only has to make a guess as to the future of their own business, but as to what inventions will be made in the course of the next few years. However, past history teaches us that obsolescence has discarded more fixed assets than wear and tear.

They go on to comment on the practice of capitalizing obsolescence, and remark that the policy of capitalizing the unabsorbed depreciation of a superseded asset by adding this to the capital invested in the new facility, is not only unsound from an accounting viewpoint, but if persisted in will produce such an inflated investment in fixed assets that they will be carried on the books far above even replacement costs, in a period of higher prices. This must not be confused, however, with the case where an improvement and rehabilitation has been made of the existing facility that renders it of greater value for the purpose at hand than previously reposed in the reconditioned asset.

Causes of Obsolescence. Machines, equipment, methods, and processes become obsolete for many reasons:

1. An extensive change in the method of manufacture has developed.
2. A substitution of materials is to be made.
3. A substitution or consolidation of operations may be desirable.
4. Newer machines of the latest type will produce the same part or piece more economically.
5. A newer machine or method may reduce:
 - a. The hazard to the operator.
 - b. The hazard of fire.
6. To reduce waste and spoiled parts, more rigid and heavier equipment may permit heavier cuts or drafts and produce better finish or give greater required accuracy.

In certain cases it has been possible to go back and study the life history of a property, facility, or group of facilities, and determine when and how and over what periods obsolescence has been the governing factor of depreciation instead of deterioration, in the retirement of the property prior to the expiration of its estimated normal useful life. The studies are complicated and difficult to make but are informative in formulating policies to provide for future contingencies. They are no guarantee, however, that similar conditions arising in the future will bring about the same results in the same periods.

When we realize that the railroads spent nearly \$35,000,000,000 in the period from 1922 to 1927 to improve their means and methods of transportation; that the automobile industry now produces ten cars per man in the time formerly required for one; that 2 men do the unloading work of 12 in the steel industry, 2 men the work of 14 in furnace charging, 7 the work of 60 in pig casting, and in the open-hearth operation 1 does the work of 40, and in pig-iron unloading 2 do the work of 120, as pointed out by Messrs. Simonds and Thompson in their book "The American Way to Prosperity," then we begin to comprehend the part that obsolescence has played and is still playing in the industrial drama.

Obsolescence, then, is the most troublesome factor in depreciation today and is giving executives more concern than deterioration since it is not adequately provided for in most instances. The more progressive companies charge the deterioration factor of depreciation, either through machine-hour rates or the factory overhead, direct to the cost of the sales, and endeavor to secure in the price levels proper allowance for depreciation for every saleable unit of product turned out and sold. This is not true, however, of the factor of obsolescence, since this, like a fire, to all intents and purposes, occurs without warning. To guard against a loss from this source (fire) we use fire insurance, where the risks are spread and the burden per individual lightened. It is believed that it is entirely reasonable to assume that in the majority of cases, except in certain public utilities and a few isolated cases in industry, the price level is too low on the average to permit an adequate recovery of the assets wasted by reason of the factor of obsolescence. Now this is a serious menace to industry and to the future of industry in this country.

Two Sound Ways of Dealing with Obsolescence. How can we cope with this situation? There seem to the author to be two sound ways to deal with this problem, since it is patent that we cannot set up a rate for obsolescence in the majority of instances that means anything. These are:

1. Set aside from surplus net earnings a definite amount based on such past history and experience, and appraisalment of the future, as best judgment in each case will permit, and actually create an obsolescence fund whose rate of upbuilding may vary from year to year, depending upon the business and the surrounding conditions—the fund not to be subject to dividend declaration except after a careful review of all factors affecting the immediate and future position of the company.

2 For industry to consider careful cooperation with the insurance underwriters with a view to working out a basis of insurance for obsolescence, just as for fire, spreading the risk and lightening the burden per individual.

In the first case we should be carrying our own obsolescence insurance; in the second case it would ultimately be done on a more scientific and equitable basis, and the cost of the premium would be included in the cost of sales. Admittedly, there are difficulties in working out obsolescence or placing it on an insurable basis, but it does not seem to the author that the problems presented are any more difficult or of greater magnitude than those which confronted the insurance underwriters when other risks and hazards were placed on an insurable basis.

The all-important thing for industrial executives to bear in mind is that no one is immune from obsolescence, and that furthermore the lack of a definite appreciation of this fact and a comprehension of what it may mean in the mere matter of economic existence is responsible for price levels now too low to permit, in too many instances, an appropriation of surplus net profits to guard against this contingency. Some companies have a definite policy predicated upon estimated savings to be made by a new piece of equipment as compared with the old, of amortizing the cost of the equipment within a definite period out of the earnings. This again presupposes that the price level and the production are such, or will remain so, as to permit the estimated earnings and the amortization of the investment in the asset within the period contemplated.

It is estimated from the U. S. Treasury Department reports that there is invested in fixed assets in manufacturing industries in the United States, subject to depreciation, \$16,000,000,000.

Excessive depreciation charges may so increase the cost of sales as to lose business on a competitive basis; on the other hand, the manufacturer who fails to adequately provide for depreciation and ignores it in his costs is likely to secure business on a competitive basis but at the expense of the impairment of his stockholders' investment.

The Illinois Manufacturers' Costs Association states:

At the present time the most disputed question regarding the depreciation charge is whether or not the purpose in providing for depreciation is to distribute the cost of the fixed assets (less salvage value) over their estimated useful and productive life, or to provide out of the earnings made during their

estimated useful and productive life, capital to renew the depreciating assets on the basis of their replacement values, as these renewals become necessary.

Depreciation Should Be Cared for by Suitable Appropriations of Surplus or by Insurance. The author believes that it is sound practice to so apportion the depreciation charge as to recover through the current operating accounts the original investment in the asset, as and when the asset is replaced, and that it is more or less immaterial how this charge is determined, *i.e.*, straight line, reducing balance, sinking fund, or other method, provided that it represents the facts as nearly as possible and provided furthermore that fluctuations in value and the factor of obsolescence are cared for by suitable appropriations of surplus or by some form of insurance.

This means, then, that the variation in value at the time of replacement as compared with the original cost, due to the variation in the purchasing power of the dollar, as determined by valuation, would be cared for by an appropriation of surplus, specifically created for that purpose. During the period of high prices this appropriation would be larger, and, conversely, it would be lower during the low-price period of the business cycle.

CHAPTER IX

INSURANCE AS A MANAGEMENT PROBLEM

INSURANCE INDEX

An Outline Prepared by P. D. BETTERLEY, *Assistant Treasurer, Graton & Knight Company*, and a Committee of The American Management Association Consisting of W. W. CRAWFORD, *Assistant Treasurer, American Optical Company*; A. M. MACINTIRE, *Assistant Treasurer, United Fruit Company*

A summary of the essential features of business insurance, avoiding technical and legal details which require concentrated study. Many amplifications of coverage and methods are possible to suit the needs of individual risks.

Basic Principles of All Insurance.

- A. Need and responsibility for protection.
 1. Guarantee against uncertainties.
 2. Duty of management to guard against loss.
 3. When and how much to insure merits deliberate conclusion.
 4. Responsibility extends beyond purchase of ordinary insurance.
 5. Penalty results from ignorance of insurance requirements.
 6. Careful supervision and research pays.
 7. Affiliate only with the best insurance organizations.
- B. Fundamentals of good contracts.
 1. The written interpretation of a two-party agreement.
 2. Real value of a policy is its net worth.
 3. The intent should be understood by the contracting parties.
 4. Concurrent insurance may avoid controversy.
 5. The "standard form" may be modified to fit buyer's need.
 6. Binding contracts should be in force on time.
- C. Cooperative procedure.
 1. In principle insurance is mutual between buyer and seller.
 2. Policy is a contract of indemnity not a wager.
 3. Cooperative dealings increase protection and reduce costs.
 4. Discrimination in buying is security itself.

Media of Indemnity.

- A. Types of insurance organizations.
 1. Stock companies with reasonable guarantee of stable cost.

2. Mutual companies with contingent cost liability.
 3. Reciprocal, or exchanges, with wide division of responsibility
 4. Lloyds underwriters.
 5. Foreign companies.
 6. State funds.
 7. Self-insurance.
- B. Types of policies.**
1. Specific insurance.
 - a. Valued form and flat amount policies.
 - b. Excess cover can serve useful purpose.
 - c. Contingent form for unusual hazards.
 2. Blanket form.
 3. Floater type or general cover.
 4. All risk combinations.
 5. Coinsurance contract.
 6. Guaranteed amount form.
 7. Automatic insurance.

Contract Provisions.

- A. Obligations of contracting parties.**
1. Indemnity denied.
 - a. When there is an erroneous statement of conditions.
 - b. Because of material changes in circumstances.
 - c. If loss is due to abnormal events as during riots or war.
 - d. Agency misrepresentation, may avoid protection.
 2. Restricted rights of the insured.
 - a. Amount of insurance limited to actual values.
 - b. Property cannot be moved at will.
 - c. Protection is not automatically transferred by sale.
 - d. Cancellation with penalties.
 3. Rights of the insurers at time of loss.
 - a. Prompt notification, inspection, and reduction of damage.
 - b. Privilege of replacing property, and recovery.
 - c. Legitimate cause and effect must be evident.
 - d. Indemnity according to contract terms.
- B. Third-party interests.**
1. Mortgagees have prior claim in settlement.
 2. General public benefits by complete protection.
 3. Employees need security for their disability claims.
- C. Special policy conditions.**
1. Period of effectiveness.
 2. Description of risk should be complete.
 3. Permits add breadth to coverage.
 4. Warranties are safeguards for the insured.
 5. Waiver to recovery from third parties to be acknowledged.
 6. Falling building clause is not conducive to good protection.
 7. Reinstatement is essential when property is restored.

Regulating Factors.

- A. Costs of insurance and standard rates are affected by:
 - 1. Nature of risk and location.
 - 2. Facilities for prevention.
 - 3. Maintenance and care.
 - 4. Type of inspections.
 - 5. Structural changes.
 - 6. Segregation of property.
 - 7. Exposure hazards.
 - 8. Frequency of losses.
 - 9. Form of protection.
 - 10. Term written for.
- B. Valuations.
 - 1. Consider all insurable values whether or not on record.
 - 2. Replacement consistent with practical use is logical.
 - 3. Underground structures may be damaged.
 - 4. Include property of others if liability therefor exists.
 - 5. Effect of coinsurance clause should be realized.
 - 6. Settlement basis should be predetermined.

The Ultimate Test.

- A. When loss occurs.
 - 1. Act as though not insured.
 - 2. Notify owners and insurers immediately.
 - 3. Insurance manager should be on location.
 - 4. Immediate salvage efforts are essential.
 - 5. Avert further loss by preserving usable property.
- B. Settlement of loss.
 - 1. A complete claim, deliberately made, inspires confidence.
 - 2. Reasonable proof of loss is required.
 - 3. Disagreement impairs collection and future relationship.
 - 4. Arbitration and court proceedings are costly.
 - 5. Abandonment to insurers is not permitted.
 - 6. Subrogation and prosecution may be detrimental.
 - 7. Distribution is proportionate to obligation assumed.
 - 8. Each insurer pays its legal share only.
 - 9. Insolvency of insurer leaves no recourse to claimant.

INSURABLE RISKS**Property Hazards.**

- A. Fire and related losses.
 - 1. Incidental losses by natural elements or theft.
 - 2. Inherent explosion.
 - 3. Replacement affected by ordinance.
 - 4. Smoke, smudge, and water.
 - 5. Underground piping, structures, and foundations.

- B. Leakage.*
 - 1. Chemicals and gases.
 - 2. Rain water and snow.
 - 3. Service water and steam.
 - 4. Sprinkler systems.
- C. Natural elements.*
 - 1. Earthquake.
 - 2. Flood, rain, and tidal wave.
 - 3. Hail.
 - 4. Lightning.
 - 5. Windstorm, tornado, cyclone.
- D. Breakage and collapse.*
 - 1. Aircraft.
 - 2. Electrical equipment.
 - 3. Engine breakdown, including turbines and flywheels.
 - 4. Explosion of boilers and pressure tanks.
 - a. Direct damage.*
 - b. Extra costs for repairs.*
 - c. Distributing pipes.*
 - d. Fractures.*
 - 5. Machinery and equipment.
 - 6. Plate glass.
 - 7. Special hazards of the industry.
- E. Criminal.*
 - 1. Burglary.
 - 2. Embezzlement and misappropriation.
 - 3. Forgery.
 - 4. Messenger holdup.
 - 5. Pay-roll robbery.
 - 6. Theft, larceny, and pilferage.
- F. Surety.*
 - 1. Bid bonds (annual and specific).
 - 2. Guarantee of promises.
 - 3. Lost instrument bonds.
 - 4. Mutual insurance assessment bonds.
 - 5. Performance of contract.
- G. Transportation.*
 - 1. Automotive and aircraft.
 - a. Transport risk.*
 - b. Hail, lightning, windstorm, floods.*
 - c. Collision.*
 - d. Theft and pilferage.*
 - 2. Baggage and tourist floater.
 - 3. Marine, foreign, and domestic.
 - a. All-risk policy form.*
 - b. Blanket policy form.*
 - c. Open policy form.*
 - d. Specific policy form.*

4. Railroad transit, express, parcel post, and registered mail.
- H. Miscellaneous.
 1. Aircraft damage.
 2. Credit insurance.
 3. Demolition of buildings.
 4. Errors and omissions insurance.
 5. Fine arts all-risk cover.
 6. Improvements and betterments.
 7. Livestock.
 8. Mortgage loans.
 9. Patent infringement.
 10. Personal effects "all risks" insurance.
 11. Strike, riot, civil commotion, and war.
 12. Title and land values.

Liability Insurance (Personal Injury, Damage, and Property Loss).

- A. Contractor's liability.
 1. Due to operations.
 2. Defective conditions.
- B. Employers' liability and workmen's compensation.
- C. Explosion.
 1. Boilers and pressure tanks.
 2. Engines, flywheels, and machinery.
 3. Industrial.
- D. Infringement of patents.
- E. Landlord's, owner's, and tenant's direct or contingent liability.
- F. Mechanics' liability.
- G. Motor vehicles, etc.
 1. Aircraft.
 2. Automobile direct and contingent liability.
 3. Teams.
- H. Public.
 1. Aircraft.
 2. Athletic events.
 3. Bailee's customers risk (laundries, warehouses, etc.).
 4. Carrier's liability.
 5. Catastrophe hazard.
 6. Contractors' and public service companies operations.
 7. Defective products, machines, and equipment.
 8. Elevator, crane, and track operations.
 9. General.
 10. Malpractice and professional risk.
 11. Owner's and contractor's protective.
 12. Trustee's, bankers', and agents' liability.
 - a. Blanket bond covering fraud and shortage.
 - b. Forgery and alteration.
 - c. Theft.

Earning Power.

- A. Accident and health insurance.**
 - 1. Employee groups.
 - 2. Individuals.
 - 3. Field representatives.
- B. Life insurance.**
 - 1. For executives.
 - a. New factor of value to insure.
 - b. Basis for valuation.
 - c. Means of credit stabilization.
 - 2. Group coverage for employees.
 - a. Mortgage protection.
 - b. Contributory plan for protection and thrift.
 - c. As a welfare measure.
- C. Pensions or insured retirement plans.**
 - 1. Importance of, to employer and employee.
 - 2. Possible benefits.
 - 3. Contractual features.
 - 4. Contributory plan.
 - 5. Annuity payments.
 - 6. Withdrawals.
 - 7. Division of costs.
- D. Profits anticipated.**
 - 1. Contract violation.
 - 2. Faithful performance.
 - 3. Investment guarantee.
 - 4. Patent infringements.
 - 5. Production.
 - 6. Sales.
- E. Rentals and leases.**
 - 1. Owners' rented property losses.
 - 2. Lessees' losses from casualties.
- F. Use and occupancy (business interruption insurance).**
 - 1. Fire.
 - 2. Sprinkler system.
 - 3. Natural elements.
 - a. Earthquake.
 - b. Lightning.
 - c. Water, rain, and tidal waves.
 - d. Windstorm, tornado, cyclone.
 - 4. Power units.
 - a. Loss due to breakdown.
 - b. Failure of public service.
 - 5. Electrical.
 - 6. Special machinery.
 - 7. Service interruption.
 - 8. Strikes, riots, war, etc.

INSURANCE WITH SECURITY

By P. D. BETTERLEY, *Assistant Treasurer, Graton & Knight Company*

One of the greatest enterprises today is insurance, and that portion which pertains to property, liability, and casualty risks is a tremendous factor in business management, while life and accident insurance occupy an increasingly prominent position. Insurance is a method of distributing infrequent but serious losses among many; to indemnify unfortunate persons having interest in things of material value. Scarcely a dollar of assets is free from insurable risk.

The buyer of insurance should realize that he pays for losses; that rates are largely regulated by experience. The results will be less restrictive laws and large economic savings. Business management spends large sums for research; to check losses in various lines; to guard property against mechanical damage, wear and tear; yet fails to control hazards and often neglects insurance. Deliberate calculation rather than fear or actual catastrophe should determine when and how much to insure.

There should not be any mystery about insurance. It may be complicated, but it is understandable, and nothing should be taken for granted. Frequently changes in risks are known only to the insured, therefore he must assume responsibility for the security of his protection.

When an insurable loss occurs and indemnities are less than is required to restore the value, there is an irreparable loss, but most of these can be avoided by diligent application to the subject of insurance protection at all times.

Basic Principles of All Insurance. *Need of Insurance.* It is to guarantee as far as possible against uncertainties: to maintain financial security and credit. It is certainly the duty of management to guard against losses in business, to have on hand as promptly as possible, working capital to replace destroyed property or source of earnings.

Collateral Interests. The public is interested through their investments in business enterprises, including deposits in banks. The latter loan their funds only on ample security, usually in the form of liens on property. If these properties are not so protected by insurance that their replacement can be guaranteed in case of destruction, then the resources of the bank and depositors may be diminished.

Method of Protection. It is not always necessary to insure the risk with a company or association designed for the purpose, but the security is greater when insurance is so placed. If the probable losses are greater for a reasonable time than the cost of insurance, then there can be no argument as to the desirability of purchasing the protection. In a general way it may be safe to follow the rule that if the risk is distributed among many units, so that the maximum loss in any one unit is limited to a small proportion of the aggregate, it is possible to fund the risk instead of purchasing insurance. Much depends upon the number of units, values involved, the rates of insurance, and possible control of the hazards.

Responsibility of Management. Responsibility does not cease with the purchase of types of insurance in common use. No insurance company can fully anticipate the needs of a risk as distinguished from another risk. Certain fundamentals will govern in each case, but there is usually need of modifications to fit particular conditions, and the manager is in a position to analyze these requirements better than an outsider. It is the duty of the buyer to procure such insurance as a careful, prudent person would obtain, to secure the property and assets. His failure to do this, to exercise foresight, will result in permanent reduction of net worth.

Supervision and Research. There is need of preserving proper records, making frequent study of changing conditions, following decisions of the insurance companies and the courts. Intelligent research tends to create measures for prevention.

It is quite evident that insurance security involves consideration of legal rights, contractual obligations, values, operations, future developments, liability as owner, operator, or employer.

All of the foregoing requirements would seem to warrant placing in charge of insurance one who has experience, judgment, initiative, vision, and thoroughness as special qualifications. Since it involves the preservation and security of values, the treasurer, or someone in that line of activity is the logical one to assume responsibility, aided in major problems by a committee.

Additional security may be effected by contacts with well informed insurance officials, agents, or advisers. Exchange of experience with other buyers in non-competitive lines is mutually helpful.

Stable Connections. Having first made contact with reliable underwriters, whose reputation has been established for fair treatment and who are licensed to do business in your state, continue the connection, because the insurer who has enjoyed your business for a long period of time is bound to give you the benefit of a doubt in time of misfortune. If insured with stock companies the same reasoning holds true with regard to the local agency connection. Work with them, not without them.

Fundamentals of Good Contracts. *Real Value of an Insurance Policy Is Its Net Worth.* The intent of the contract should be understood. It is a promise to pay for loss sustained under the peril insured against, but it does not cover indirect or all incidental losses. There should be an interpretation of its various clauses, for mutual agreement is the foundation of a policy.

Concurrent Insurance. All policies covering one single risk should be written exactly alike, in order that there may be no question as to contribution by the various insurers. Hazards of a similar character, such as liability to the public and employees, should be covered by policies which allow no gaps in protection. Much delay and embarrassment can be avoided at time of loss settlement by complete agreement beforehand.

Policy Standards. It is a well-established rule that if an uncertainty exists, the one causing that condition must bear the penalty, therefore be sure that the insurance policy is what you think it is. There is a standard form which must be the basis of the insurance contract, but it may be qualified to fit buyers' needs. The written portion of a policy supersedes the printed portion, and the last endorsement governs in preference to earlier ones.

It is the duty of the insured to inform himself of the terms, considered in relation to every possible loss, ascertaining if every agreement made with the insurance companies will stand the test.

Need of Anticipation. Buyers of insurance would do well to know that the insurance policy has actually been issued at the time that they desire to have the risk covered. If time does not permit of this a binder can usually be obtained, and if negotiated by authorized persons, it may be perfectly safe, but whenever possible insurance needs should be anticipated. Legally a contract of insurance is not binding until the insurer is satisfied, has accepted the risk, and received the deposit premium.

Authority of Agents. A notice given to a broker or agent may be accepted by the insurance companies but is not always binding. Ordinarily the broker is the agent of the insured, empowered only to accept premiums, but every representative is governed by his contract with the underwriter.

The rights of agents to waive requirements or change policy conditions are very limited, and there is great difference between soliciting agents, collectors, and representatives empowered to act. Neglect of these features has caused many irrecoverable losses.

Completing the Contract. It is common practice to negotiate for insurance, remitting for the premium in a reasonable time, and this procedure is safe under ordinary conditions, although the insurance company has the legal right to cancel for non-payment, as stated in most contracts. If the policy is to be held by a bank or other mortgagees, the property owner should examine them and obtain a duplicate or insurance certificate, certifying to the existence of the policy. It is also important that all policies, their riders and endorsements, be signed by the company or its authorized agents. All endorsements should be firmly attached to the original contract for they are a part of it.

Cooperative Procedure. Contract Observance. All insurance is mutual in principle, the loss being met through contributions by members of the insured group. The insurance contract is personal in character, and its value depends upon the observance of good faith, throughout its effective period. It is not a wager, guaranteeing to pay a specified sum in case of misfortune, but is an agreement of indemnity to compensate within the scope of the policy.

Value of Cooperation. The insurer will select and rate risks on a loss cost basis, therefore the integrity and cooperative spirit of the insured are essential factors in determining the cost and protection of insurance. Voluntary efforts to reduce the hazards should be reflected in lower premium costs, and more liberal claim adjustments.

Security Demands Only the Best. There are regulations set up to protect the insurance organization as well as the public against fraud and discrimination, but it may be possible to modify the ordinary insurance contract. Adequate knowledge of the risk and insurance principles will enable the buyer to obtain the type of protection which will carry with it security.

Media of Indemnity. Stock Companies. This group issues non-participating policies with reasonable assurance of stable costs, but a material change in hazards, or experience, may affect the aggregate premium. They operate through agents and brokers, the former being direct representatives, whereas

the latter may indirectly sell insurance for a number of companies. There are advantages in having direct representatives of the company near at hand, and competent agents may furnish valuable assistance.

Through association of many companies they maintain extensive laboratories for the study of hazards and testing of protective devices. In some communities they support protective agencies, who assist at time of a fire in keeping down the loss by salvage work. They will insure practically any risk, the rates varying according to the hazard.

Mutual Companies. The second principal source of supply is the mutual companies, the insured being the stockholder and participating in any profits accruing from the business. This method results in a lower cost under average experience, but carries with it a contingent assessment liability, continuing for some time after expiration of the policy and varying in amount. In some instances non-assessable policies with dividend features are written, also contracts with discounted initial rates and supplemental dividends. Under good management these mutuals have no occasion to call upon the assured for additional funds; in fact most of them pay liberal dividends.

There are many groups, some of them specializing in a particular line, such as the grain and hardware mutuals. Others will insure diversified factory lines which measure up to certain standards. Some of these companies include sprinkler leakage, windstorm, hail and inherent explosive hazards along with their fire protection. The Factory Mutual group also maintains valuable testing laboratories and an appraisal department, which furnishes a good valuation of their insured properties in considerable detail, without any charge. Mutuals write workmen's compensation extensively and certain other risks.

Reciprocal and Interinsurance Groups. There are reciprocal organizations and exchanges which operate on a different basis from other insurers. A group of subscribers agree to insure each other by pooling their interests, and the affairs are looked after by an agent or attorney, with power to act. There is no corporate existence. In case of a loss sustained by one of their members all of the others contribute in proportion that their insurance bears to the aggregate, but the one sustaining the loss does not contribute toward his own benefits. A condition of this insurance is the assumption of liability by the insured up to as high as ten years' premium.

The responsibility and success of the plan depends upon the "attorney in fact," who has practically everything in his control. A large amount of insurance is written by these groups, even in states where they have been denied license to sell through representatives.

Lloyd's Underwriters. Lloyd's insurance groups follow a method of insurance by which a large number of individual underwriters agree to assume a proportion of losses occurring under a single policy, and the security is limited to the financial ability of each underwriter. This type is more generally used abroad than in this country.

Foreign Agencies. Foreign insurance companies maintain departments in the United States which they operate with good financial security and in much the same manner as domestic companies, being under the jurisdiction of our insurance laws.

In the case of risks located abroad or marine imports, it is recommended that the risk be covered either by domestic companies, or those foreign companies who maintain strictly independent subsidiaries in this country. Great distance does not develop the same cooperative understanding that may be expected when dealing with domestic organizations. When necessary to collect under court action, the claimant is at great disadvantage.

State or governmental funds operated by government departments with the intent of furnishing insurance at cost, on workmen's compensation risks principally. Risks outside of a state cannot be protected by the local state fund and this creates some embarrassment for the concern that does an interstate business.

In some jurisdictions insurance in state funds is compulsory. Such methods are not consistent with sound business practices and any tendency of government agencies to enter the business insurance field should be discouraged.

Self-insurance. The operator or owner assumes his own risk, creating an unencumbered reserve or guarantee, sufficient to provide direct compensation for losses. Without such provision no insurance can be said to exist. Self-insurance lacks the security which goes with outside insurance, and the success of this method depends upon the direct interest of the management.

It is possible to handle multiple units of risk in this way under favorable conditions; for instance a large number of small stores might be thus handled with considerable saving, whereas concentrated property would involve too much risk. A large number of employees in an individual factory might be compensated for accidents without particular hazard because there are many units of risk.

This method directly focuses the attention of the management on losses and often brings about preventative measures which would be otherwise ignored. It is possible and often advisable to buy insurance to cover above certain limits of loss, on self-insured risks.

Other examples of self-insurance practice are personal guarantees, trust funds, and private insurance organizations.

Types of Policies. *Specific insurance*, covering a particular class of property against one type of hazard, such as fire insurance on a building, but not including the contents. It is practical where there is no likelihood of change in the risk, and when values are fairly stable.

When merchandise is subject to nominal damage, such as raw stock in green, or wet process, a "flat amount contract" written for such arbitrary amount as the estimated maximum loss will save expense as compared with other forms. It accomplishes the same result on vacant property pending disposal, where there is a small market value but large replacement cost. It is applicable on property which has served its original purpose, if replacement is to be on a smaller scale.

A "valued form" is used in protecting paintings, scientific instruments, special machinery, etc., which do not have any established market value. There must be complete agreement as to values before insurance is affected. Marine or transit values are declared in advance.

Another variation of the valued form occasionally used is the three-fourths value contract, the insured agreeing to accept in settlement no more than three fourths of the value of the property at the time of loss. Partial losses will be paid in full. If the liability of the insurers is less for total loss than the amount of insurance, the premium on the excess will be refunded for the full time of the policy.

Policies are also issued with a three-fourths loss clause under which the insurer agrees to pay only three fourths the amount of any loss up to the limit of the policy.

Excess cover insurance may be used in connection with specific insurance, but does not normally pay any portion of the loss which was assumed by the specific policy. It may serve as reinsurance under a self-insured plan, taking care of all losses above the maximum amount which the self-insurance plan assumes. There may exist a contingent liability in respect to a specific hazard, such as the operation of automobiles by representatives, and protection for this type of risk is now available.

Blanket insurance, a very desirable type of policy which covers one type of risk on more than one class of property, such as buildings and contents or public warehouse risks. It will cover the contents if moved from a building to an adjacent one on the premises of the same insured. Heavy losses have been sustained where insurance covered contents in each building for a specific amount, the aggregate insurance being sufficient, but the values being shifted so that there was a shortage of protection in one building. It is also good coverage for automobile fleets, fidelity bonds, and similar groups of units subject to the same risk. There is much less occasion for disputed claims under the blanket form.

A combination policy is used in covering more than one type of risk, such as fire, lightning, sprinkler leakage, and windstorm. Another example is the open marine policy, covering many navigation risks. A single policy may also cover a risk in which the parent company and subsidiaries have an insurable interest.

Another variation of blanket protection is the all risks policy, suitable for products in circulation, equity in deferred payment sales, salesmen's samples and similar distributed risks.

Coinurance Contract. While more often referred to as a clause in the policy, it merits a definite form classification because of its far-reaching effect. The owner agrees to insure at least 80 per cent or other stipulated percentage of value. This feature is designed to equalize rates and losses by the placement of a fair amount of insurance, and in the event of failure to do so, the insured must assume a portion of the loss. It is an equitable method but quite generally misunderstood as to its effect upon settlements in the event of partial loss. It operates as follows:

1. If the amount of insurance equals the percentage of value called for, at the time of loss, any complete or partial loss will be paid in full—not exceeding limits of the policies applying.

2. If the amount of insurance is less than required as above, the settlement will be for such proportion of any loss as the amount insured bears to the amount required to be placed.

There is considerable danger of being coinsurers when there are large values belonging to others for which the insured is responsible; in fact, separate specific insurance is sometimes required by the owner to guard against such shortage of protection.

Guaranteed Amount Form. This is especially good when there are fluctuating values due to change in inventory volume and market prices, or where a material portion of the property is subject to nominal damage only.

A resulting benefit is the avoidance of maximum insurance to cover the peak values and subsequent short-rate cancellation penalties. A statement of values must be filed yearly and unless insurance carried is equal to 100 per cent of stated value the insured stands a proportionate part of the loss.

General Cover. This form is used to cover products which in the course of manufacture or assembly may be shifted from one locality to another, a limit being fixed for each location equal to 100 per cent of value. Provision is usually made for reporting the values at each location, and the rates are based on the conditions at each place.

Floater policy, for merchandise variously located in branch warehouses, stores, and on consignment with dealers. It operates either as an excess or full cover policy. It is written for the total estimated value, setting a limit of protection for each location which is ample to cover values at any time. Reports of actual values may be rendered periodically to the insurers, and an adjustment of premium made at the end of the policy term. It is sometimes written with a coinsurance clause. It has these advantages among others:

1. It obviates constant check on the insurable values.
2. It reduces the aggregate amount of insurance to be carried because the protection "floats."
3. It may cover merchandise sent to another establishment for processing.
4. Eliminates possibility of loss due to failure of dealers to place sufficient insurance.
5. Avoids loss due to insolvency of consignees or their insurers.
6. It covers owner's interest in property sold under special conditions.
7. It protects merchandise stored in transportation companies' warehouses after responsibility of the latter ceases.
8. It may cover exhibits.

Automatic Insurance. This is not a title of any particular form of insurance contract which is now available, but represents a method of insuring. There are so many changes in the nature, value, and volume of risks, that it is quite necessary for the security of insurance to have it apply automatically. It is next to impossible to anticipate maximum requirements at minimum cost in time to adequately protect all risks. The following list includes types of automatic contracts and examples of risks they may cover:

1. Blanket form, buildings and contents in a contiguous group against single risk of fire, wind storm, use and occupancy, etc.
2. Floater, covering merchandise in various locations against risks of fire, windstorm, and allied lines.
3. Open marine policy, covering all merchandise shipped, against various transportation hazards, from shipping point to final destination.

4. Transit policy for railroad, express, automobile, aircraft, and similar transportation hazards.
5. Open parcel post policies. Bailees' customers property risk.
6. All risk policies for such items as deferred payment sales and products in circulation.
7. Contractors' and mechanics' liability covering operations in various states.
8. Excess policy to cover higher limits of property loss, or liability, otherwise specifically insured.
9. Contingent liability contract, separately insuring against various possible claims.
10. Automobile fleet policy, against usual insurable risks.
11. Fidelity bonds, a position form to cover various persons in specified positions, or a blanket contract covering all employees.
12. Group life, accident, health, and retirement plans.

Obligations of Contracting Parties. *Erroneous Statements May Bar Recovery.* The statement of conditions must be substantially correct, and the fact that the insurer might readily discover an error is no relief to the insured. The insurer does not contemplate protection for unusual risks unless there has been a voluntary disclosure of material facts and evidence of insurable interest.

Change in Circumstances May Void Policy. If there are changes which greatly increase the hazard or place the risk in a different class, the written consent of the insuring companies should be secured in advance and become a part of the policy contract. Some common causes are the use of dangerous materials, ceasing operations, vacancy, assignments, and alterations.

Loss Must Be Direct Result of Risk Insured against. Insurance does not attempt to protect men against all consequences of accidents, and ordinary insurance policies do not cover in case of strikes, riots, war, earthquakes, or similar abnormal conditions. The common use of explosive materials in industry has created many disputes as to whether a loss was occasioned by fire or explosion. Under various surety and liability risks a claim must be substantiated by reasonably conclusive evidence.

Disagreement between Insurer and Agent May Affect Collection. The contract between agents and insuring companies may be the indirect cause of an uncollectable claim, the insurers declining to back up the representations of the agent if the acts of the latter are contrary to the agency agreement. The buyer has no way of knowing what arrangements have been made, therefore he should be very cautious in respect to any deviations from established practice, being sure that the underwriting organization accepts the conditions before the insurance contract becomes effective.

Restricted Rights of Insureds. Study the contract limitations, for many acts common in business procedure may invalidate the protection. Insurance in excess of indemnity values is not permitted.

It is not permissible to move insured property to an entirely different location without the consent of the insurer, either at time of removal or by prior understanding, for the hazards may be much greater in the new location. The value of a blanket or floater policy is fully realized under changeable conditions of this character, also avoiding excess insurance or cancellation penalties.

Change of Ownership Stops Protection. The buyer of property should not overlook the fact that insurance protection is not automatically transferred at the time of sale, for the insurable interest has changed hands and a new contract must be negotiated. Even a change in name must be recorded and a lien upon property, without consent of the insurer, may void the policy.

Rights of Insurer at Time of Loss. They are entitled to immediate notification and to enter insured's premises for inspection in the interests of all parties. They also have the privilege of a reasonable time in which to make settlement.

When physical property is involved, they have the option of paying equivalent value in cash or replacing with property of similar kind and quality.

When a third party may be considered liable for the loss, the insurers may exercise the right under the subrogation clause of attempting recovery from the said third party.

Indemnity Paid Only When Terms Are Complied with. Occasionally policies are written which guarantee to the holder payment of the amount specified on the face of the policy, but usually the settlement is based on the actual loss sustained, or such proportion thereof as the insurer has agreed to pay under the coinsurance clause, and other provisions of the contract. Legitimate cause and effect must be evident.

Third-party Interests. Mortgagees. They have a right to expect that their interests will be taken care of, their loss payable direct to them, and may call for filing of the policies. Advance notice of cancellation is required. They should ascertain that the insurance is in proper form for in the case of loss of the collateral, the indemnity received under policies becomes the real collateral for the loan. If there is a short settlement of a loss, the mortgagees are paid first and not proportionately with the insured.

If subsidiary companies or other parties are interested in the risk, they should be named in the policy, whether their concern be through the medium of ownership, or liability for any casualty.

Public Welfare. The general public has considerable interest in the protection of risks. Carelessness and widespread destruction seriously affect the aggregate valuation of taxable properties, and cause removal of business from a community. Semipublic organizations and public officials can do a great deal by cooperative efforts in the prevention of waste and furtherance of sound principles of insurance.

Under compensation or liability policies, employees and the general public should receive consideration as to the security of their possible claims.

Special Policy Conditions. Term Written for. The period covered by the policy is definite—to the minute—and protection should be continuous without any lapse of time. There have been cases of disputed liability because of the fact that loss occurred at about the hour when the insurance expired, with damage continuing after the actual time limit had been reached. If there is continued and unbroken protection, the claim for aggregate loss may be successfully maintained.

Description of Subjects at Risk. It is wise to name most of them so as to establish the intent of the contract. Supplementing this there should be a general classification covering items "not otherwise provided for." Proper-

ties sometimes overlooked are those located in railroad cars, in yards, articles held in trust, records and patterns.

Necessity of Permits. If there are stipulations in the standard policy which are contrary to the actual conditions or wishes of the insured, they are nevertheless fully effective until modifying permits become a part of the contract. This may appear to be a curtailment of liberties in owner's use of his property, but it is necessary to have general safeguards for the protection of all buyers of insurance.

Warranties Must Be Faithfully Observed. The insured undertakes to maintain standards of protection and avoid unnecessary risk. If a breach of these warranties exists at time of loss the insurance may become invalid. The mere fact that representatives of the insuring organization do not discover the violation does not relieve the insured of responsibility.

Waiver of Rights. When railroads have side tracks on the premises of the insured, it is customary for them to require a waiver of right to recover for losses due to their operations there. As this limits recovery by the insuring companies, it is essential that the policy contain an acknowledgment of this condition or similar ones.

Fallen Building Clause. It stipulates that fire insurance ceases if a building, or part of it, falls. While the building may be seriously impaired by collapse, there is yet some value remaining to be protected. The absence of this clause materially adds to the security in case of earthquake or tornado damage, and where explosion may be a contributory cause of the loss.

Reinstatement after Loss. Many property loss policies are reduced or cease to cover after loss and the amount must be reinstated with proportionate premium charge. There are some exceptions, such as marine policies and those which contain an automatic reinstatement clause. There are few limitations under liability policies, the contract covering as many casualties as may occur.

Cost-regulating Factors. Nature of Risk Affects Costs of Insurance. Standard rates are made for certain classes of risks, adjusted to fit the conditions existing under any one particular policy. It does make a great deal of difference where the insured is located, effective water supply, the type of construction, and the nature of operations. The moral risk is seriously affected by the presence of undesirable tenants in the same or adjoining building.

Preventive Measures Reduce Premiums. To indicate the value of an automatic sprinkler system, the amount saved in insurance premiums will in many cases pay for the entire installation in five to ten years. The division of a risk into multiple units by complete fire walls materially reduces the hazard.

Watchmen should be selected by the judgment that they will exercise in emergency—these positions should not be filled by superannuated employees. A few unqualified men should not be given complete control of large property values which, during working hours, are protected by almost the entire organization.

These general principles of prevention apply equally well to many risks other than fire.

Maintenance and Care. These are big factors in keeping down the cost of insurance. Casualties do not occur at stated time or place, therefore it is wise to avoid spasms of carefulness, cleanliness and prevention. It is far better to safeguard risks so that small casualties cannot grow to become large ones.

Inspections. They should not be treated as a nuisance by either management or employees, but rather as a united effort to keep down losses from which all suffer. There should be cooperation between the manager, owner, and the insurers' inspection department, but an inspection service within the organization should be constantly maintained and effectively keep conditions up to standard.

The insurance manager will find familiarity with the physical conditions of the risk a great aid in securing full protection at minimum cost. He should know of changes which are contemplated in building construction, alterations, installation of machinery, relocation of property, changes in operations, and use of hazardous materials.

Segregation and Control of Hazards. Insurable values should be well distributed and management can so regulate its risks as to minimize both the insurance costs and losses. If there is needless exposure to a hazard, it is obvious what the result will be on insurance rates. The insuring organizations are also guided by the frequency of losses, even though the amount of actual damage is small. Small losses should be investigated and potential risks considered, for escape from a serious loss may be due to fortunate circumstances.

Form of Insurance Affects Costs. Suitable coverage is available which avoids overinsurance (see types of contracts). Frequent cancellations of policies add materially to the cost through short rate penalties, and consolidation of policies of the same kind decreases labor and error. Good risks with stable values may be covered for three years at a lower rate than for one year.

Valuations. Importance of Authentic Values. These are a source of concern to the manager of insurance because of their relation to the amount of insurance to be placed, as well as the basis for determining the amount of settlement. As many books of accounts carry property at cost or market, whichever is lower, it is obviously unsafe to rely solely upon those figures. Neither can the current market value be used as the prices fluctuate and represent diversified interests scattered over a wide area, which would tend to average rather than actual values at a given location. An appraisal is a reliable basis if the record is kept up to date.

It is frequently necessary to use all of the foregoing sources of information, and the fact that the insured valuation does not agree with any of these records does not prejudice the collection of indemnity. True insurable value is the cost of replacement at the time of loss with due allowance for obsolescence and practical use.

Excluded Property. Underground foundations, piping, and items of this character which are normally included in building cost records are excluded in appraisals of insurable values and in the average insurance policy. The susceptibility to damage is rather remote, but quite possible under certain conditions, therefore should be considered.

Market or Cash Value Clause. Security will be more complete if the basis for settlement is made clear before loss occurs. For example, it may be agreed that the value shall be based on a published price list, less current discounts.

A predetermined basic value clause is particularly good in long time, or multiple processes of manufacture. If there are intermediate processes, producing goods which may be sold, they should carry their proportionate share of fixed charges and overhead, consistent with the value of the finished merchandise.

An arbitrary value may be established to cover unusual cases.

Property of Others. The temporary possessor of property should protect it, providing there is a possibility that he may be held accountable to the legal owner. It is essential that such items be included in the insurable values, especially if there is a coinsurance clause in the contract.

Circulating Property. The legal owner should make sure that his property which is at another location for processing, use, or sale is adequately covered by insurance. It is better to keep it under the owner's policies and control, and a floater policy is an automatic device for such security of protection.

The Ultimate Test, Settlement of Loss. What to Do When Loss Occurs. Action should be governed by such judgment as would be exercised if there had been no insurance. Those in charge should do what is reasonable to prevent further loss by salvage operations and restore protection for that property remaining. The owner's representatives and insurers should be notified immediately, and effort made to reduce the damage by refinishing or preserving such property as may be usable.

Insurance Manager's Duties. He should be promptly at the location of the damage and cooperate with other constituted authorities. Knowing the actual circumstances pertaining to a loss, he will be better prepared for subsequent negotiations, and there will be less likelihood of insurable losses being uncollectable. There is an exceedingly important connection between placing of insurance, salvage and restoration activities, and the settlement of loss.

Making Up the Claim. While a prompt settlement is to be desired in order to restore the activities of the business, there is danger in too hasty action before the effects of the casualty are fully realized. Look over everything so that nothing may be overlooked. If there is a coinsurance clause it may be to the claimant's advantage to place his losses at a conservative figure, for the application of maximum values may result in the insured contributing a greater proportion of the loss than he otherwise would.

Proof of Loss. When negotiating with adjusters it would be more tactful not to press too vigorously on disputed values even though the insured is convinced of the justice of his claim. Reserve decision until the list is completely gone over. The adjuster is not presumed to be as familiar with the property as the owner, and some portion of the claim may appear excessive to him, while other items may seem to be undervalued, the grand total meeting with the approval of both parties. There is much less likelihood of a controversy if the procedure is along the lines of common sense and cooperative spirit. There must be a reasonable proof of loss, and the burden of proof rests with the assured.

Dangers of Disagreement, Arbitration. It is better to compromise, for the cost and delay due to arbitration and court procedure materially reduces the amount realized from the claim. A good agency connection, or an established reputation with all insurers, helps to evade such undesirable experiences.

Either party may call in advisers, although undue influence and prejudice should be avoided. Adjusters should not call in advisers in a line competitive with that of the insured, without the consent of the latter.

Abandonment of Property. The owner of damaged property is not permitted to abandon it to the insurers, although the insurers have the privilege of taking such property as they pay a full loss for. It is sometimes customary, more particularly in marine losses, to dispose of the damaged goods at auction, but it might be wiser to accept a smaller indemnity than to risk sales reputation by such disposal of special merchandise. The manufacturer has facilities for reconditioning to advantage of himself and the insurers.

Subrogation and Prosecution. Under the subrogation clause the insurers may bring action direct or in name of the insured against those actually responsible for the loss, but before permitting such action the claimant should consider the probable effect on his business through such publicity or the possibility of counteraction. Such experience is not confined to fire insurance, but many insurable risks.

Distribution of Loss. The insurance manager often feels quite secure if he has policies, aggregating the maximum possible loss. Aside from the effect of coinsurance clauses, non-concurrency and failure to comply with the various contract regulations, the real test comes when a claim is made.

Each insuring company is obligated to pay only its legal share of the loss. The distribution is made proportionate, and the fact that one insurer denies liability does not impose any additional obligation upon those remaining. Whether or not such denial is due to insolvency, or invalidated coverage due to acts of the insured, the latter must stand such portion of the loss as the insurer refuses to pay.

Summary. The entire cost of protection must be borne by the users, and insurance is made up of contributions to a general fund from which the victim of a casualty is reimbursed, providing there has been procured by him insurance which securely protects him against those losses. Eternal vigilance as the price of safety was never better exemplified than in the purchase and application of insurance.

SECTION III

PRODUCTION MANAGEMENT

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CHAPTER I

HISTORY AND FUNDAMENTALS OF PRODUCTION

By CHARLES H. HATCH, *Vice President, Miller, Franklin and Company, Inc.*

The marvelous achievements of modern American mass production have been so thoroughly advertised that the man in the street and too often the man in the factory think of *all* production in terms of mass production. Mass production does, of course, account for a very large part of all the goods we produce, but only a comparatively small number of plants are or should be on a mass production basis. To assume that those highly efficient methods are universally applicable to all products is a grave and very expensive mistake as we shall see later on in this chapter. It is also a common error to think of all factories as being large. In 1919 the average number of employees per factory was 31.4 and 94.4 per cent of all manufacturing plants employed 100 or less workers.

History of Production. In order to understand the fundamentals that underlie the correct choice of organization, policies, methods and equipment it is desirable to have at least a superficial knowledge of the history of production, for modern production has evolved from the various methods that have been used in the past. The value of subdivision and specialization of labor which is one of the essentials of mass production was discovered hundreds of years ago. It has been proved thoroughly and found good.

Since modern production is an evolution, and since the choice of correct methods depends to a great extent upon the underlying philosophy of production, let us briefly summarize the history of the various stages through which production has evolved.

For convenience historians have divided the history of production into four principal stages which they label the "domestic period," the "handicraft period," the "cottage period," and the "factory system period."

The *domestic period* was the crudest. It practically ceased to exist in anything approaching a pure form with the rise of barter and exchange.

Under the domestic system each family produced everything it used—food, shelter, clothing, weapons, means of transportation, farm implements, and so on, from the raw material in its natural state to what it was pleased to call the finished state. That obviously is a method confined to people only a little above savagery.

But during this period, we can assume that some families learned to produce certain items better than others. The Stone Hatchet family became skilled in the manufacture of weapons, but with this increase in skill they became poorer and poorer as hunters. Up the river a few miles the Hunter family had never been able to achieve even reasonable skill in making things with

their hands, but as pursuers and killers of animals they were highly successful. Naturally they had given much thought and effort to preserving the hides of their kill.

So the Hunters soon found themselves carrying an inventory of cured hides far larger than they could use for clothing and tents, while they were handicapped by lack of effective hunting implements.

The opposite condition existed in the Stone Hatchet family. This was soon rectified by barter, through which simple procedure the wants of both were met. The plan worked so well that the Stone Hatchets concentrated on making hunting equipment which they traded not only for hides but in due time for shoes, clothes made out of hides and for all of the other things which other families had specialized in producing.

Specialization having proved a valuable idea, production found itself in its second stage—the *handicraft period*. This transition took place largely during the Middle Ages.

Under the handicraft system each worker carried through the complete production of an article from the raw material to the finished product, but not usually from the rawest raw material. Thus a tanner transformed a raw hide into finished leather, the cobbler or the harness maker turned the finished hide into shoes or harness. But the cobbler, say, performed every operation essential to the making of the shoes, not as today when one man does nothing but make welts, another sews uppers and so on, each workman performing but a single simple operation.

It was during the handicraft period that the guild system grew up. Primarily a guild was a voluntary association of artisans in the same trade for mutual protection. They started practically as labor unions but before long the guilds partook of the nature of both unions and of what we know today as trade associations. They formulated strict rules as to the qualification of members and to govern the admittance and training of apprentices. They set standards of quality and, without doubt, did a good deal in the way of price fixing to insure that the workman would get a fair return for his effort and skill.

At times during the late Middle Ages the guilds exercised a large amount of power, not only in industry but in government as well. In some instances large numbers of workers in a guild grouped themselves into communities that not infrequently partook of the nature of factories. This was true to some extent of the European watchmakers and goldsmiths and diamond cutters.

In the handicraft period, it is to be remembered, there was no segregation of capital and labor. The craftsman was both, once his apprenticeship was completed. He owned the tools of his trade, he invested his own capital in raw materials and in the keep of his apprentices—which was about all the wages the poor apprentices got. He made the product himself and then went out and sold it, if he was not working on a definite order.

This system worked very well until the fifteenth or sixteenth century when exploration opened up trade routes to hitherto undreamed of markets for the products of the craftsmen. The possibilities of selling manufactured articles suddenly swept far beyond the ability of the craftsmen to produce.

As was to be expected by this time certain craftsmen had by industry and thrift laid up quite a little store of capital. They invested this in raw materials which they distributed to workers who lived largely in the country and who had before relied principally upon agriculture for a living. These *cottage dwellers* made up the raw materials into finished goods for the capitalist who collected the finished product and sold it either direct to the consumer or in bulk to merchants who distributed it to the far corners of the then rapidly expanding known world.

The workers generally owned their tools and had greater or less direct interest in the production of the goods, although none in their final distribution. As a matter of fact, it was during this so-called cottage period of production that the change over to the wage system took place.

While it is customary to think of the cottage period as one in which home work was the rule we actually find that along about the sixteenth century the cottage workers, instead of working at home, began in a small way to be grouped for convenience, and perhaps for the sake of better supervision, in what can by a stretch of the imagination be called "factories." In fact it appears that by the beginning of the nineteenth century there were in Germany some twenty of these factories, each sheltering from 100 to 500 workers. But these were not at all factories as we think of them today. Each worker owned his own tools, and although there were here and there some attempts to subdivide operations, the product was to an overwhelming extent still produced according to the tenets and methods of craftsmanship, each craftsman turning out a complete product.

It is frequently but erroneously held that the *beginning of the factory system* was coincident with the application of power to machinery. Actually, of course, the use of power, even of crude mechanical power, is about as old as history.

At first, men were used to turn wheels. Then animals were put to work in treadmills or to revolve a vertical shaft by means of a handle to which they were hitched. The use of water power and the power of the wind far antedates the discovery of the steam engine.

It is, as a matter of fact, probably pure coincidence which accounts for the fact that the steam engine came into use at about the time of the beginning of the factory system.

The best judgment of historians and industrialists is that the factory system of production was actually brought about by the invention, in the fifteen years from 1770 to 1785, of the spinning jenny, the water frame, the mule and the power loom—all inventions for the making of cloth which greatly increased the production possible per man hour.

It is to be noted that all of these devices could be operated by water power. In fact the spinning device referred to as the "water frame" was so called because it was intended to be operated by water power. Actually it was first run by horse power. Remember that the steam engine while it had been used to pump water from mines for many years had not yet been sufficiently perfected to enable its use for driving these new power-operated machines. Because it was then necessary to locate the machinery close to the waterfall

we naturally find that these new textile implements were grouped in what we can now recognize as factories.

The machines were so expensive, incidentally, that the average craftsman could not have bought one and so we find ownership of the tools passing from the workman to capitalists and the erstwhile craftsman hiring out to the capitalist for wages. It is also particularly to be noted that the new machines took from the worker the major part of his skill so that he became a mere machine tender.

With all its advantages over former sources of power, water power left much to be desired as it was necessary to place the factory where the water power existed, which was not always the most convenient place considering access to labor, supplies of raw materials, and convenience to markets.

But in 1785 the steam engine had been so perfected that it was finally possible to use it for driving the machinery in cotton mills. This great mobilization of power practically without limitation as to location was a tremendous stimulus to inventors who rapidly worked out methods by which many processes formerly done by hand could be done by means of power operated machinery.

The progress on those lines was rapid but not at all uniform in all industries. As a matter of fact improvements have been made all along during the nineteenth and twentieth centuries and right now are being made almost daily.

Beginnings of Mass Production. While we are prone to think of mass production as a very recent development for which our present generation deserves most of the credit the fact is that modified mass production existed in the first power operated cotton mill in the closing years of the eighteenth century. It did not take superhuman intelligence for those early manufacturers to discover that when a loom was set to make a certain construction of, say, sheeting, it was far more economical to continue it on that product indefinitely than to change it over to some other type of goods. And the very nature of the various machines used in the various steps of the process of converting raw cotton into finished cloth brought about the subdivision of labor which is an essential factor in mass production.

But this could not be done with certain types of goods for which the demand was narrower. So some looms had to operate turning out goods of one kind for a while and then shut down and adjustments made so that it could produce another type of cloth for a week or a month. This might be described as *job mass production*.

In certain other industries what was essentially mass production developed fairly soon after the invention of the steam engine. This was true of paper making, the rolling of steel, and the strictly processing industries such as reducing iron ore, flour milling, and some few others. But even with the advent of machines which took over much of the skill formerly supplied by the craftsman mass production approximating what we know today did not exist.

Even the power driven machines in the woodworking and metal working industries were essentially tools which helped the craftsman more than hand tools could. They were not at all of the nature of the present production machines which demand but little skill in their attendants.

In considering the history of production, it is a common mistake to think of mass production as bursting nearly fullfledged upon an eagerly waiting business world. That is not what happened. It was a growth, rapid in some industries, as we have seen, very slow and gradual in others. In some it has not arrived even yet, and quite properly so.

Effect of Taylor's Work. The big growth in the application of mass methods to industries to which it had formerly not been thought applicable came really as a by-product of Taylor's investigation of feeds and speeds in metal-cutting operations.

As a result of the time studies he made on machine tool operations he discovered that many useless motions were made and also that great economies could be realized from the subdivision of operations, making possible the great specialization of men and machines as well as repetitive operations. Men of vision saw the possibilities of this plan, and forthwith began to experiment with its application to many other industries.

So obsessed with the possibilities did these enthusiasts become that they naturally carried the ideas to extremes, attempting at times to apply mass methods to jobs for which they were not fitted. But the vision of those early experimenters with mass production brought about developments which have not only made mass production possible in industries to which it is fitted, but greatly improved the efficiency of production in operations that cannot be put on a mass basis.

The first step of this sort was the *improvement of power generating and distributing devices* which made cheap power available in needed quantities at any point within reason. Today the electric current, which is of course the most used form of industrial power, can be controlled almost perfectly, transmitted over long distances and subdivided to an almost infinite extent.

Next in importance probably were the *engineering developments and refinements in power tools and in measuring devices* which made it possible to produce products to an almost unbelievable degree of accuracy. Without this accuracy of dimension interchangeability would be impossible.

The rapid advance in *knowledge of industrial chemistry* was also an important factor.

Basis of Real Mass Production. All of these steps were leading to the development of a real philosophy of mass production, the basis of which was, as I have said, the breaking down of the fabrication of a product into its elements, so that one workman performed a single simple operation over and over. Parenthetically it is to be noted that later on many of these elementary operations were grouped both to increase the speed of production, largely with automatic machines, and in order to reduce the handling of material.

The Single-purpose Machine. It is not surprising that we find great emphasis being placed upon the development of single-purpose machines which performed only one or at most a very few of the simplest operations on a product and which could not be readily changed from one product to another. Some of them were specially designed for a certain product and could not possibly be used on any other. For a time the single-purpose machine became, especially in the metal-working trades, practically the god of the mass-production enthusiast.

Then came an unpleasant surprise. The American consuming public began to demand radical and frequent changes in the style of most of the things it used. Such changes in style or construction immediately make many of the highly developed single purpose machines obsolete. Mass production to be most effective depends upon mass distribution which will enable the machine to be kept busy continuously at maximum capacity with comparatively little change in the product.

Ford had built up an admirable system of mass production utilizing single-purpose machines to the practical limit. All went well until the public voiced its demand for changes not only in the appearance of the Ford car but for even more radical changes in its mechanical construction.

The single-purpose machines in the plant and *the plant itself, which was the very essence of a huge single-purpose machine*, were inflexible. To meet the new demands the entire factory had to be revamped and a large part of the machinery junked at an expense variously estimated at more than \$100,000,000. Considering loss of profit during the change this is probably a conservative estimate.

This and other lessons shook the faith of the enthusiasts in the universal applicability of mass methods of production.

Four Types of Production. It is now apparent that there is a place for four distinct types of production in the business world and that each type calls for certain kinds of machinery and equipment and a plant layout best suited to its particular needs.

These four types are:

1. Hand work or craftsmanship.
2. Job production, the artisan type of work but utilizing machines and power.
3. Job mass production.
4. Mass production.

To explain: There is today very little pure *handicraft production* in which power is utilized to only a negligible extent, most of the work being performed with hand tools. Cases in point would be the making of replicas of antiques and of highly artistic pottery. The graphic arts themselves are the principal places where the workers are not only artists but craftsmen as well. Such are the sculptors, painters, etchers and so on. There are also some craftsmen in the building trades who persist in hand work although in many cases they could, if they would, utilize power driven tools.

Under *job production* I include small jobbing foundries and machine shops which work practically solely on special jobs or repair work, small garment-manufacturing plants, the production of highly styled apparel and specialty fabrics, job printing plants and the like.

There is nothing approximating mass production in this type of plant. The workers are often craftsmen who are advanced enough to utilize power driven tools to a greater or less extent. No two jobs may be exactly alike and long runs on a single product are unknown. Therefore there is no place in a shop like this for highly specialized single-purpose machines.

However, there is apt to be a more or less regular sequence of operations, no matter what the product may be. Therefore, it pays to give some thought to the most convenient layout of equipment so that even on special jobs there will be as little handling of material as possible.

Under *job mass production*, I classify those plants which will run for a comparatively short period on a single product using mass methods, but which then change over their machines to turn out another run of a more or less different product. A book-printing plant would be an example; so would textile mills which make only a comparatively small amount of each kind of cloth, and furniture factories which may operate for several days or even a few weeks on a certain design of chair and then change over to another. A very large part of all American production is of this type.

And it is in just this type of business that very expensive mistakes have been made by trying to adopt mass methods in their entirety, including single-purpose machines. While it pays to lay out the plant logically considering the probable sequence of operations, the plant and its equipment must be kept flexible so that it can be adapted to change of products.

It is of the utmost importance that those concerned with production determine at the outset for just which type of production their particular business calls. Much of the existing inefficiency of production is due to failure to make the correct decision. It may be just as disastrous to try to apply mass-production methods to a product that is not suited to it as to fail to make the most of mass methods where they are suitable.

A great many products are made in what are practically job shops that could readily enough be made by highly refined mass methods. On the other hand there are far more products that are being turned out by mass methods at the present time that should be made by job mass methods, and that if so manufactured could be reduced notably in cost.

The lowest cost will be achieved only when the factory layout and equipment are perfectly suited to the peculiarities of the product. I can scarcely stress that fact too much, for anyone with a wide experience in factories and who subjects what he has seen to careful analysis must realize it. Yet it is far too seldom realized.

Misapplication of Mass Methods. Let us consider the misapplication of mass methods in somewhat more detail for unless the considerations underlying its use are clearly understood there is little good in studying the detailed problems of plant layout and equipment.

It is important to realize that while single-purpose machines were developed to meet the needs of mass production, the mass production itself is the expansion of the single-purpose machine idea. Looked at from the broader point of view a factory is a machine for the production of certain goods which, if mass production is to be used, must be a single-purpose machine. So if you have set up a factory as a single-purpose machine you are bound inevitably to mass production. This may prove to be a most expensive mistake in the case of a sudden change in design or style of your product.

It is also exceedingly dangerous to set up a factory for mass production of a product that is still in its promotional or even early commercial stage. Such a product should rather be turned out by job mass production, using to the utmost standard multipurpose machinery.

Take electric refrigerators as a horrible example of mass production entered into on a large scale before the time was right; that is to say, before the style and engineering features had been definitely and finally determined. It was some years before the public had enough experience with this radically new product to make up its mind as to just what it wanted in the way of an electric refrigerator for domestic use. Likewise it took time for the engineering features to be finally determined. But the manufacturers, obsessed with the mass-production enthusiasm, proceeded to set up their plants on that basis and naturally developed a number of single purpose machines which promptly became obsolete with the development of new types that better suited the public taste and with the working out of more economical factory methods.

The radio industry when young suffered from much the same mistake. Receiving sets at first were highly complicated devices, and usually enclosed in luxurious and very expensive cases. Mass production with its quota of expensive single-purpose machines was generally adopted at the start. But with improvements in the product, simplification of mechanism and the demand for less expensive sets, the entire design of the product changed and factory equipment in large part became obsolete. Had a compromise been made at the start and standard machinery installed which could have been easily changed to make other designs of product the great losses due to changing over the plants would have been obviated and doubtless the whole radio industry would not have seen so many sad days.

In the development of any plan of production consideration must be given to the supervision that the plan will call for and the supervisory talent that is available. For instance, I have seen plants so organized as to require a \$50,000-a-year production executive, while had the production been organized along different lines a \$10,000-a-year production man could have achieved comparable results. This is usually due to a mistaken desire to secure absolute perfection in production performance and sometimes to a desire for glorified records of performance.

Choice of Type of Production. Needless to say it is usually not difficult to determine at the start whether a product shall be made by method 1 or 2. The trouble usually enters when it is necessary to decide whether method 3 or 4 is best suited. So far we have spoken briefly of the considerations inherent in the product itself, and in the likelihood that changes in style may affect production. There are however many other important considerations which call for not only the best of engineering and production skill but knowledge of and the ability to forecast the market as well.

As an indication of some of the other factors that help to determine whether mass-production or job mass-production methods shall be used consider the situation that exists in two factories of a large shoe manufacturing concern.

Plant A is located in a city where highly skilled machine operators are available but where the scale of wages is high. Even with the most modern labor-saving machinery and equipment it is not feasible to make low-priced shoes in plant A, for the high wage rates make the cost too high.

Plant B, on the other hand, is in a small country town where wage rates are low. The workers, however, are not nearly as skillful as those of plant

A. They would be entirely incapable of using the modern equipment with which Plant A is equipped. Therefore it is out of the question to utilize this low-wage labor in the making of fine shoes.

It is important in deciding upon how the product shall be made to keep clearly in mind just what is the relation of production to the rest of the business structure. The ideal aim is to produce a product of the requisite quality, at the lowest possible cost, with a minimum of waste, paying the highest feasible wages and securing delivery in accordance with the reasonable requirements of the customers.

There are a multitude of factors governing this as we shall see in future chapters, but basic and underlying them all is the sound decision as to just which of the four possible types of production is best adapted to the product, taking into consideration all other factors.

CHAPTER II

ORGANIZATION OF THE MANUFACTURING DIVISION

BY PERCY S. BROWN, *Partner, James O. McKinsey & Company*

Organization, regardless of the place it occupies in an enterprise, is effected in order that the most efficient performance of the activities necessary to attain the objectives of the business may be secured. If this is to be done it is, of course, necessary that responsibility for the performance of these activities be fixed, and that the activities themselves be grouped in some manner so that when responsibility is fixed it will be based on some logical relationship of one group with another. In classifying or grouping activities the following objectives should have careful consideration:

1. Each group should comprise those activities which require a similar type of ability or training so that the executive in charge may become an expert in his field.
2. In so far as possible the executive heading up the group should be convenient to the place where the activities are carried on, in order to be in close contact with those responsible for performance and at the same time available for consultation.
3. In order that the group executive shall have the greatest possible freedom from detail, the number of subordinates reporting directly to him should be as few as possible, consistent with the needs of the enterprise and the effect that such an arrangement might have upon expenses.

These principles are applicable to the organization as a whole and not merely to the productive part of the organization. Therefore, we find an organization created in such a way that major functional groups are first determined. Common practice has divided the first groupings into financing, making, selling, and to these it is not unusual to add research and industrial relations or personnel management. Under these major groupings will be found the important functions of accounting, budgetary control, office management, controlling, designing, manufacturing, purchasing, selling, advertising, making market analyses, forecasting, hiring, guiding employee activities, etc. In turn these groupings are still further broken up into functional activities. It makes no difference how the organization be charted, or even if it has no organization chart, the fact remains that in operating the business, regardless of what it may be or what product may be manufactured, these functional activities do exist. One man may perform a half dozen of the functions in one organization, while in another six men may be needed.

Later in the chapter the relationships existing between the manufacturing division, which is the only one that will be covered in detail, and other divisions will be covered in a general way because of their inter-dependence.

Establishing the Manufacturing Division

In proceeding to create an organization to carry on the productive part of the enterprise, seven distinct steps should be taken:

1. Functional Activities. As soon as plans are made to begin the manufacture of some product it is immediately recognized that plant, machinery, equipment, tools, operators, clerks, foremen, etc., must be provided. Then the personnel will be expected to do certain things, some to perform actual work on the product, some to plan, some to record, some to inspect, and so on through the many activities connected with making any product. These activities we call functions, and in this chapter we deal with those functions connected only with productive operations.

As shown in the first part of the chapter, there are many functions related to production, such as cost accounting, personnel selection, purchasing, but in this chapter we will assume that the right raw materials and supplies are bought, the right kind of plant and machinery available, the personnel carefully chosen, cost accounting provided for, etc.

Our main manufacturing functions then will have to do with the plant or factory, machinery and tools, materials, production plans, personnel and their payment, methods, quality control or inspection, and the actual making of the product. All of these functions and their subdivisions are found in any manufacturing enterprise, no matter what form the organization may take.

2. Type of Organization. Having determined upon the functions that must be performed it then becomes necessary to decide upon the type of organization that it is thought will prove the most effective for their performance. The traditional type of organization is that known as the line or military type. This is disappearing from industry and therefore need not be discussed here. The most commonly accepted type of organization is that known as the line and staff. In its original conception this type of organization consisted of a line organization, from which certain activities, which might be classified as highly specialized and either advisory or in the nature of research, had been removed. These specialized activities, like research, engineering, etc., inasmuch as they did serve or could serve a large part of the organization, became staff activities, with much or all line authority withdrawn. In actual practice, the line and staff organization does not function as it was first conceived, rather it is a combination of that and the functional type. Perhaps it would be more correct to avoid calling the organization by any identifying term, and if this should be inadvisable to originate a new one such as functional and staff organization, or something else descriptive of what the organization actually is.

It does not seem necessary, in this chapter, to enter into lengthy discussion on types of organization, as management literature is replete with information—although much of it is confusing—and with organization charts. If functions are defined, and their relations understood, it is not difficult to show them graphically, regardless of what the organization type may be called.

3. Grouping of Functions. Once the functions have been outlined and the type of organization determined upon, it becomes necessary to relate the

functions to each other. The first step then would be to begin with any one of the major classifications, and for an example we might select quality control. In most instances quality control will consist of four functions: inspection of raw materials, inspection of purchased parts, inspection of parts or materials in process, and inspection of finished product.

The main functional group, quality control or inspection, quite clearly embraces the four subgroups as they are obviously closely related, but it cannot be expected that the technique of grouping functions is such that a fixed rule will apply. Opinions vary, of course, but the important thing is to arrange logical groupings as a basis for the next step.

In charting the quality control functions we would show the chief inspector or head of quality control division, and then connected in line authority below would be the four major functions of inspection. If we were selecting the personnel for these functions we might have, in the case of a small enterprise, the chief inspector functioning as head of the department and of finished product inspection, and another man in charge of raw material, purchased parts, and parts or material in process inspection. In a large organization all of the functional groupings would be headed up by specially qualified men under a chief inspector at the very start.

In considering functional groupings it is necessary also to take into account the question of location as affecting the performance of the work. Let us take the planning function as an example. In scheduling, routing, and moving materials and parts in process we would be faced with a choice of either fully centralized operation or partly centralized. We would probably find very quickly that more effective results could be secured if the major planning function were centralized, with records of a permanent nature, planning boards, and clerical functions which are performed in relation to all planning and not to purely departmental planning activities, all in the central planning office. But those service functions having to do directly with production department activity would be decentralized and "planning centers" or "flow centers" would be set up to serve individual departments or groups of departments so located that they could be effectively served from one center. These centers would perform that part of the planning that has to do with seeing that operators are rung in and out of jobs, work issued, received and counted, schedules for the specific departments followed, etc. Regardless of the plan followed, the functions themselves would be closely related from a group standpoint and the problem of the extent of decentralization would be considered from the standpoint of size of organization, size and location of departments, etc.

These examples are given merely to emphasize here the point that grouping of functions is important, regardless of just how the groups may later operate.

4. Functional Responsibilities. The groups being determined, it becomes necessary to define carefully the responsibilities of each. This can best be done through Standard Practice Instructions, which may be simple or elaborate. The primary requisite is to reduce to writing exactly what is expected of each group, not only what they do, but what their relationships are with other groups. Instructions defining responsibility would be issued for the time study, methods, scheduling, routing, inspecting, and all other group

functions and at the same time would state just what relationships would exist between these groups and all others that they serve or with which they come in direct or indirect contact. The rate setting section would have close relationships, from a staff but not from a line standpoint, with all manufacturing and many service departments, with foremen, operators, clerks. It would have similar relationships with the pay-roll department, cost department, engineering department, purchasing department, and others, because it would be performing or requiring services from them in varying degrees. The responsibilities in relationships, large or small, should be defined as concisely as possible but as completely as necessary.

5. Functional Authority. Where responsibility is definitely fixed it should be accompanied by such authority as may be necessary in carrying out the work. This does not mean that all responsibilities need authority, but that to hold a man responsible for kinds of work where he must instruct, lead, and, if necessary, order others, he must have the authority that will make his work effective. A foreman, for example, has fixed responsibilities no matter what type of organization he works under, and he must have the authority to accompany it. A clerk in the stores department, on the other hand, has the responsibility for posting accurately all withdrawals and entries of materials in the balance of stores ledger and needs no authority to accompany this responsibility.

The functional type of organization proposed by Frederick W. Taylor defines functional management as follows:

Functional Management consists of so dividing the work of management that each man from the assistant superintendent down shall have as few functions as possible to perform. If practicable the work of each man in the management should be confined to the performance of a single leading function.¹

When Frederick Taylor wrote this definition the only type of organization in general use was known as the "line" organization and the step from that to a purely functional type was a big one which few organizations took at the time or subsequently. Taylor, it will be remembered, provided for eight functional foremen, four in the shop and four in the planning room. Each of the eight was to have direct authority over each operator in specific functions. The four in the planning room were the route clerk, instruction card clerk, cost and time clerk, and disciplinarian; and the four in the shop were the speed boss, repair boss, inspector, and the gang boss. Here there could be no overlapping of authority as each function carried full line authority, but only in relation to the functional activity.

But in other types of organization this overlapping does occur. Every foreman, for example, in a line and staff type of organization performs work connected with personnel, planning, engineering, inspecting. If all of these be classified as staff functions then the foreman inevitably is forced by circumstances to do some work in these categories, because otherwise he would not be able to "produce."

¹ TAYLOR, FREDERICK W., "Shop Management," p. 99, Harper & Brothers.

The same procedure that sets up standard practice instructions for responsibilities should be followed in relation to authority. If properly done the two will be handled at the same time and the instructions will cover both points. It is easier to place responsibility and at the same time state clearly what authority, if any, accompanies it, than to state the former and leave the latter to be added later or covered in a separate instruction.

6. Establishing Policies. This is a matter of related activities. Policies must be announced and understood, for example, in relation to hiring, placing, transferring, or discharging operators. They must be formulated on the broad relationships of the entire planning organization to production departments, of the works engineering department to other departments, etc. Many of the policies will originate higher in the organization than the manufacturing group, and will serve as a basis for manufacturing policies, as well as those of other departments of the enterprise. Though some of the policies will also be clearly defined in standard practice instructions, in relation to contacts between specific departments, they must also be clearly understood as relating to the entire organization.

7. Selection of Personnel. Knowing the functional groupings, and their responsibilities and authorities, it then becomes necessary to fit the personnel to these groups. It is unnecessary to go into detail as to how it should be done and one example will suffice. Let us take the example of the quality control or inspection function. It will be clear that for raw materials control, if only weighing, gauging, and measuring are necessary, a man with no particular training would be satisfactory, but if specifications were in force calling for chemical analyses of the materials a skilled chemist would be needed. An organization that scientifically goes into the matter of organization, will, in all probability, have job specifications made at this point. Then the personnel department will make its recommendations, discuss them with the proper department heads, and take the necessary steps to provide men and women who have the required ability, experience, and personality, either from within or without the organization.

We now have the basis for an organization chart, not because we are particularly interested in a chart but because we must in some way picture just how the functions and the personnel are related to each other. Probably no two manufacturing enterprises will approach the charting in the same way, even if they are relatively of the same size and make identical products. Therefore, organization charts are avoided here; if one were shown it would be merely the author's personal opinion as to what might be best for some specific organization. Perhaps the person who would undertake the chart would call the head of the manufacturing department the works manager, perhaps the production manager. Then he would decide to have an engineer in charge of all plant engineering functions as well as machinery and tool design and manufacture, while another man would decide to have two departments. It is immaterial from the standpoint of what we are after at the moment—the picturization of the organization with which we intend to work. The picture will show functional relationships and the personnel, and the standard practice instructions will define relationships, responsibilities, and authorities.

Now we are ready to begin work, but some of the personnel will be used on productive work, adding to the value of the product by work actually performed upon it; others will be engaged in what might be termed "service" or "staff" work, such as planning, engineering, etc. Immediately we must consider how we can most effectively use this personnel.

It would seem logical that we must have our manufacturing departments properly laid out in relation to each other, and then within the department we must have machinery and work places laid out as scientifically as possible. We may group our departments by specific character of work performed, all punch presses in one department, milling machines in another. Or, if we use only a few milling machines, we may group them with drill presses and tapping machines. Then we will route the work through in proper sequence and in some cases have it travelling back against the forward flow. A manufactured part might be drilled before japanning, but tapping might be postponed until after japanning because the filling in of a tapped hole with japan might necessitate retapping. Or two different parts making up a subassembly might flow through until each is completed and then have to go for assembly to a punch press, a spot welder, or a riveting machine in another department. In many industries this has led up to a wise modification in the idea of complete departmentalization. In such organizations special-purpose machines, regardless of kind, are set up in the department where the work can be most effectively performed and "back tracking" is thus eliminated. Undoubtedly many cases could be found where one department is carrying on many varied machine operations efficiently. Size has much to do with this because what might be good practice for a large organization would be impracticable in a small one. The large organization, for example, could have punch presses, drill presses, spot welders, etc., in a bench assembly department and enough of them so that skilled set-up men and instructors, acting as assistants to the foreman, could be employed. In a small plant where perhaps only one of each of these machines would be used in this special department, it would require a rarely skilled foreman to handle the situation as the expense of having competent assistants would not be justified. In the latter case it would be more economical to keep the departments highly specialized and accept the back tracking as necessary. No fixed rule can be laid down as to optimum size of department, character of work that it should perform, or amount of supervision and instruction necessary.

Coordinating Departmental Interests. When factory organization is discussed it is essential that consideration be given to methods of coordinating departmental interests. At best, the possibility of friction always exists between those departments engaged in strictly manufacturing operations and the departments serving them. This holds equally true also of relationships between departments like engineering and planning. The difficulty of eliminating friction and misunderstanding between the functional foremen, under the Taylor functional foremanship plan of organization, is probably one of the most cogent reasons why functional foremanship has not been more widely adopted. Although each function is specifically defined as to responsibilities and authorities for each "boss," and carefully prepared stand-

ard practice instructions issued, yet clashes occur between the functional bosses themselves, and the men working under them are confused and sometimes irritated by having so many men "butting in" on their work. It is not that the basic principle is wrong but merely that we seem not to have progressed to that point where management can effectively use this kind of a tool, because management finds it more difficult to handle and, other ways being easier and yielding satisfactory results, other ways are adopted. No fine policies, no standard practice instructions, can perform the entire service, can insure an interrelation of functions, an integration of interest and full cooperative effort. We are still dealing with human beings as they are and not as we would like to have them be.

During recent years considerable discussion has taken place as to the part that "consent" bears in all industrial relations. We are more and more inclined to measure the quality of leadership in management by the degree with which it effectively "sells" itself to the entire operating group, regardless of position or responsibility. We use this expression selling rather loosely but mean by it that ability which one has for convincing others that the plans, methods, or what not, that are being discussed or promulgated are such that they will be glad to follow them. It would seem therefore that selling oneself to the organization is in fact securing their consent to what we wish done. This may be one of the reasons why the purely functional type of organization is not more widely used. It has not been properly sold, or, to put it in the other terms, consent has not been secured. If this be true, it places the responsibility directly on management. But if management finds that a modified form of functional management is effective for the purpose, less difficult to handle, it cannot be blamed for adopting the easier way. Any modified functional or staff type of organization, to be most valuable, must provide some means for coordinating the functions.

One of the recognized means of coordination is the committee, which provides an opportunity for a periodical organized opportunity for a meeting of the minds. But to be effective the committees should meet no more frequently than is necessary to supplement individual contacts, agenda should be planned in advance whenever possible, discussion should be free but orderly, and never should the meetings run along as debating societies, as they so frequently do when some few men with opinions and a flare toward oratory attempt to monopolize them. Organized to meet actual needs and used properly, committees are important and necessary; organized or used improperly, they are worse than none at all. It is a test of management as to what value they can be to the organization.

Relationship to Other Divisions. One other important organization matter should be given consideration—the relationship between the manufacturing division and other divisions of the enterprise. Manufacturing depends on the sales organization for the information that enables it to function. If the sales organization does not supply timely information as to anticipated sales, the manufacturing and purchasing organizations cannot hope to function at their greatest effectiveness. It seems obvious that with complete harmony and understanding between the sales, and manufacturing and purchasing organizations, the manufacturing organization can be put in a

position to plan its production so that it will always have the right goods of desired quality on hand when wanted, in the right quantity, and at advantageous cost figures. But in industries faced with wide seasonal fluctuation it is not always possible to do this. In such cases experience has shown that the production curve can be flattened to some extent when the sales, manufacturing, and financial organizations put their heads together and plan what can be done in the way of financing, manufacturing to stock, and carrying in stock for an agreed period. Industry at large needs more of this kind of cooperation, and is learning that one of the most effective ways to secure it is through budgetary control, which forces coordination, directs attention periodically to weaknesses, opportunities, excesses, accomplishments, or wasteful practices. The complete budget, by all departments of an organization, is probably the best means available for creating conditions favorable to departmental effectiveness through coordination and mutuality of interests, while at the same time accomplishing the best results for the company as a whole.

CHAPTER III

THE INDUSTRIAL PLANT

BY ROBERT P. KING, *Engineer, DuPont Rayon Company*

The planning, design, and construction of the modern industrial plant cover such a wide spread of size, product, permanence, and other variables that only general considerations can be indicated in this chapter. Each industry and organization has its own special problems, and even elements common to all industry must be evaluated to determine their degree of importance in a given case; for example, water supply is a vital consideration in some textile and paper plants, often proving a deciding factor in settling location, production costs, etc., while a foundry or machine shop finds this an unimportant element. Then, too, the problems of altering or extending an existing plant are quite different from those involved in locating a new plant, since many factors (like building arrangement, power supply, etc.) may be determined by existing facilities. This discussion follows the procedure involved in providing a new plant, with its usual accessories, indicating the important points to be considered by the management and detailed by the technical consultants.

Location. The factors to be considered in selecting a location for a plant may be grouped as:

A. Geographical (relating to general choice of state or city).

B. Local (relating to specific sites within a given area).

The considerations involved in geographical location include

1. Market.
2. Raw materials.
3. Labor supply.
4. Power and fuel and water supply.
5. Transportation.
6. Climate and other physical surroundings.
7. Public relations (legislation and general attitude toward industry).
8. Prestige or advertising value.
9. Financial conditions, banks, etc.
10. Service industries.

Among the factors influencing *local location* are:

11. Rural, suburban, or urban.
12. Character of site (shape, contour, etc.).
13. Room for expansion.
14. Public services and utilities.
15. Building restrictions.
16. Labor supply.

17. Smoke, dust, odors and noise.
18. Waste disposal.
19. Land values.
20. Taxes.
21. Services: mail, express, telephone, telegraph, etc.
22. Supplies, repair service, etc.

1. *Market.* Some industries are equally adapted to all locations (*e.g.*, laundries, bakeries, printing), though many of these are now affected by improved transportation, advantages of centralization, etc., (*e.g.*, preparation of food stuffs like meat and ice cream). It is usually preferable to produce near the marketing point commodities having large bulk or weight and small value; otherwise transportation costs may be too high. Products manufacturable without reference to local market include those of high value and small bulk or weight, involving extensive organization or equipment, and requiring frequent changes in design.

2. *Raw materials* analysis includes: quantity and quality available and required, reliability of source, transportation costs, whether supply is monopolized or competitive, and possible future trends both in the supply available and the probable needs of the industry (*i.e.*, use of substitutes, etc.). Careful study is particularly important where the raw material is a product or waste of another industry rather than a basic raw material; very rapid and fundamental changes are occurring in the availability of certain materials.

3. *Labor supply* is a less difficult problem than formerly, with the advent of automatic or semiautomatic machinery in many industries, reducing the time required for training craftsmen. In many cases, favorable results are obtained by developing the labor force by a suitable training program, without attempting to recruit skilled help. Semiskilled or unskilled labor is obtainable almost anywhere. The character of the local population may affect its suitability for a given industry, but this factor is less important than formerly, with freer movement of labor from place to place, and industrial development in nearly all sections of the country. The effect of environment on the supervising force is quite important; *e.g.*, such factors as urban advantages, recreation, schools, etc. The labor situation may be undesirably affected by near-by industries having violent seasonal or other fluctuations in activity. The status of labor organizations in a given locality is, of course, an important matter.

4. *Power, fuel and water supply* vary in importance with the need of the industry. The power situation is rapidly becoming more uniform with development of transmission facilities for electricity and pipe lines for gas and oil. The question of central station power vs. isolated plant is discussed below. In analyzing the comparative merits of various locations, definite proposals or contracts should be obtained from suppliers of these commodities, defining all factors influencing price and the details of facilities provided, *i.e.*, whether the power service includes transformers and switching equipment, whether lighting energy is billed at power rates, the extent of coal, power factor, demand, and other clauses, etc. Reliability of service, including probability of interruptions, is a very important element, particularly for industries having inherently continuous processes involving considerable

loss in case of shutdowns. The situation may justify services in duplicate, or some other emergency supply.

For water supply, some industries require closely controlled quality (chemical analysis) and enormous quantities—in others, water supply is a minor item. Coupled with this problem is waste disposal.

5. *Transportation.* Reliable facilities are particularly important in these days of low stocks and quick turnover of raw material and finished product. The best plant location from a transportation standpoint is the one which results in the least total cost of raw materials in, plus finished products and by-products out. In many cases, the freight rates are lower for raw material than for finished product; in some cases through freight rates or other peculiarities of rate schedules are unusually favorable to certain localities. It is particularly desirable to locate with switching service from more than one railroad, or on a belt line connecting with several railroads; such competition not only tends to lower freight rates, but to improve general service. Besides rail freight (including package cars, LCL container service, etc.), express, automobile trucks, and now airplane routes must be considered. The regulations of the railroads, and what they offer in the way of siding construction and maintenance, are important to develop before deciding on a plant location.

6. A number of more or less important elements are suggested under *climate and other physical surroundings*. Temperature and humidity can be controlled by suitable building construction and equipment, but at considerable cost. Temperate and reasonably even climatic conditions not only materially assist quality and uniformity of product, but increase output by keeping the health and vigor of the working force at its best. A region known to have unhealthy conditions, such as malaria, is not likely to be desirable.

7. *Public relations* include such factors as state labor laws (working hours, workmen's compensation, factory building codes, employment of women and children, minimum wages, employer's liability, etc.), taxes, and the general attitude toward industry. In some stages an unreasonable attitude of union labor has resulted in embarrassing legislation, of no permanent value to those whom it was supposed to protect. There may be a great difference between the laws, or degree of enforcement, in adjacent states or even municipalities, resulting in difficulties of competition between comparable industries. Municipal regulations affecting plant location and operation include building codes, zoning restrictions, ordinances limiting smoke, noise, dust, odors, etc., disposal of sewage and waste, taxes, and the like. A favorable public attitude may result in inducements offered to a new plant such as free site, exemption from taxes for several years, aid in financing, and preferential purchasing of product.

8. Certain localities have become so widely known as preeminent in a particular industry that considerable *prestige or advertising value* has been attached to this location. Examples: Grand Rapids (furniture), Trenton (pottery), Sheffield (cutlery), etc. With the extensive changes during recent years in general locations of industries, this factor has decreased in importance.

9. *Financial conditions, banking facilities, etc.*, have little effect on the general location of an industry, since financing is no longer a local or even regional problem. The handling of pay rolls and other local financial questions do require some consideration.

10. Some plants, particularly small ones, require *service industries* such as foundries, machine shops, maintenance and repair work, etc., as an adjunct to the business, to avoid setting up too extensive organizations within the plant. The larger industries find it desirable, as a rule, to handle such work themselves. Where the need of such service is variable, or involves extreme peaks of activity at certain times, as pattern, die, tool, and fixture work for foundries, drop forging or punching shops, and machine shops, it is usually economical to depend on outside assistance, at least in part, rather than to have partially idle buildings and equipment, and excessive labor turnover. The same principle may be applied to manufactured parts—the automobile industry is a good example.

11. Among the local factors, *urban, suburban or rural location* involves a number of considerations. The general trend seems to be toward suburban or rural locations, particularly for the larger plants, which can develop their own communities. The situation involves many investments and responsibilities besides the plant itself, such as housing, community services, and recreation, the value of which depends upon resulting advantages such as improved labor conditions, greater loyalty of employees, and freedom from undesirable surroundings. *Rural* location usually offers lower expense for land, buildings, and taxes, fewer restrictions, opportunity for expansion, lower living costs and wage scales, freedom from labor union influence, and less tendency to labor turnover. *Urban* locations have grown less attractive to the working force, due to development of automobiles, good roads, radio sets, and motion pictures. As a rule seasonal, or other non-stable industries are better in urban or suburban locations, with a larger labor reservoir, although winter industries can sometimes fit in with a farming population normally idle at that season. Among the types of industry naturally suited to urban conditions are: small plants, requiring local market or depending on other industries for supplies or service; those requiring convenient access by buyers, and hence naturally grouping themselves within a limited area (e.g., the clothing industry in New York City); those requiring mostly female labor, naturally recruited from the families of other industrial workers, and more easily obtained if the plant is convenient to the residential district. For many types of industry, locations like the Bush Terminal in Brooklyn or the central manufacturing district of Chicago offer a number of advantages; receiving, shipping, storage, power, maintenance, and other services can be shared among a number of plants, allowing the management to concentrate on its production and marketing problems with minimum capital investment and operating responsibility.

Suburban locations present many of the advantages of both urban and rural sites, particularly for medium-sized plants; there is a marked trend toward industrial suburbs of large cities (e.g., Cincinnati, Cleveland, Newark), with factories adjacent to residential districts in the outskirts of the city.

12. *The character of the site* merits careful consideration, including shape of plot, contour, drainage, whether filled or natural ground, access by road, railroad, and water.

13. *Room for Expansion.* Many of these elements are not limiting ones, and can be met by proper planning, but there may be large savings in construction and operating costs (such as material handling) resulting from a desirable site. Protection of the plant against intrusion, fire, flood, etc., from without is important; the deed or lease covering the property should be examined for incumbrances such as public rights of way and limitations as to use, besides the usual questions of mortgages, liens, and flaws to title.

14. *Public services and utilities* include electric power, gas, water, sewers, rail and water facilities, fire and police protection.

15. *Building restrictions* (as outlined under 7).

16. As far as *local labor supply* is concerned, there is not so much difference as formerly between one location and another, due to increased use of automobiles by employees. However, adequate public transportation facilities—trolleys and buses—are important.

17. *Smoke, dust, odors, noise*, and other so-called "nuisances" must be considered both from the standpoint of the effect of outside conditions on the plant in question, and that of prevention of objectionable features of this plant. This element is increasingly important with the advent of plants in residential sections and stricter enforcement of municipal codes.

18. *Waste disposal* (both solid and liquid) is in the same category; for plants like foundries the disposal of slag, etc., is a real problem, unless there is filling needed nearby. Combustible refuse can be burned in incinerators or (if the quantity is sufficient) in boiler fire boxes of suitable construction. Many cities have regulations forbidding disposal of inflammable or corrosive liquids into public sewers.

19. *Land values* are usually of secondary importance in selecting plant location, since even moderate operating advantages outweigh reasonable differences in first cost of site.

20. *Taxes* are seldom a deciding factor, unless high rates are coupled with excessive industrial valuations, or unless local taxes are supplemented by state taxes on income, capital investment, or excess profits.

21. *Services* such as *mail, express, telephone, telegraph*, etc., should be assured according to the particular needs of the plant.

22. *Supplies, repairs*, and the like should also be assured according to the particular needs of the plant.

Specific information regarding certain locations and industries can be obtained from:

United States Census reports.

United States Department of Commerce reports.

Railroad and power company bureaus or industrial agents.

Chambers of Commerce.

General Arrangement, Planning. For building a new plant, or materially enlarging an old one, the following *schedule* is desirable, in the order indicated:

1. *Evaluate Production Program.*

Plant organization:

Character of product.

Quantity and variety of product.

Production operations, process, and equipment.

Future possibilities of change in character, quantity, or method of production.

2. *Plant Layout* (see Chap. IV).

Plant organization and specialist or consultant:

Space requirements and desirable sequences or relations of process operations.

Special requirements of equipment.

Material handling and storage.

3. *Buildings (Process)*.

Architect or engineer:

Type—floor space, interrelation.

Architectural and engineering design.

Accessories (see below).

4. *Buildings (Miscellaneous or Accessory)*.

Architect or engineer:

Administrative.

Power—steam and electric generation, etc.

Warehouse—receiving, shipping.

Service—cafeteria, medical, recreational, etc.

5. *Building Accessories*.

Architect or engineer with plant organization:

Heating, lighting, ventilating, and conditioning.

Sanitation (including waste disposal).

Transportation (elevators, conveyers, etc.).

Fire protection.

Water service.

6. *Draw Plans*.

Architect or engineer.

7. *Let Contract*.

Architect or engineer with plant organization.

8. *Build and Equip*.

Contractor.

Usually the plant organization can best *evaluate the production program* by thorough analysis preceding the actual design, except perhaps in a well standardized industry such as foundry, textile, etc. Such studies can be made by a planning department, a works engineer, or a committee of operating, engineering, and process or design representatives. Each department and process should be analyzed, first separately, then in relation to the others and to general facilities such as office and power plant, finally with regard to ultimate needs and possible changes. With straight-line production layouts, subsequent addition of operations often proves difficult, sometimes requiring complete rearrangement of equipment and involving limitations of floor space.

Building design work usually calls for assistance from an architect or engineer outside the plant organization—preferably a specialist in the particular field involved—based on the preliminary analysis by the plant organization, and subject to approval by the proper organization representative. In few cases is the final design literally proportioned to the preliminary outline; there are considerations of economical dimensions of buildings, of special adaptation to the site or surroundings, of future growth, and partic-

ularly of providing plant structures of sufficiently general usefulness that resale value and adaptability are assured. Sometimes the design as well as the construction is affected by need of quickly occupying portions of the plant, or of retaining use of adjacent facilities.

There has been a decided trend toward improved appearance of factory buildings, particularly exteriors. The basic consideration is, of course, suitability for production at reasonable cost, sometimes in minimum time. Decisions regarding beautification of buildings and grounds must be made on the merits of individual cases; however, a good architect can design a plant with some regard to appearance, proportions, and suitability, at little if any excess cost. Ugliness is not a proof of cheapness. Examples of what is possible in this direction are easily found in modern concrete structures; panels or contrasting surface colors or textures do wonders to such exteriors.

Standardized buildings are offered widely today in a variety of types, and of almost any size. The use of such structures eliminates the need of a consulting architect or engineer for building planning, although such services may be well worth what they cost. These buildings are useful for small plants and for such uses as the warehouse. Among the advantages of such buildings are:

Speed of construction.

Economy in time and expense of plans.

Minimum delay in securing material, constituent parts furnished from prefabricated stock.

Costs definitely figured and assured.

Designs already proved sound.

Some of the disadvantages are:

Cost; this is often apparent rather than real when floors, heating, lighting, sprinklers, painting, etc., are added; a capable analysis of the total cost is required.

Usually not ideal for any special manufacturing work—best where no unusual process conditions affect desirable building design.

Adapted to average climatic conditions, but perhaps not for the site chosen.

Sometimes uneconomical to heat, ventilate, and light, as they are often designed only from a standpoint of construction cost.

Eliminate the disinterested viewpoint and advice of architect or engineer, who has no incentive to use any particular design except the best for the job.

Building accessories are discussed below, also *contract* and *construction* problems. In some cases design and construction work can be handled by the same organization, with greater economy, simplicity and speed.

Types of Plant Buildings. Among the factors affecting choice of specific types of factory buildings are:

1. Nature of industry.
2. Nature of process and equipment.
3. Geographical location.
4. Economy in movement of materials.
5. Control of activities.
6. Value of land.
7. Permanence and resale value.

1. *The nature of an industry* includes considerations such as:

Continuous or jobbing manufacture. Will operations be segregated under separate classes (like lathe, screw machine, etc.) or consecutively in order of application to the manufactured article and is there need of storage space or allowance for unequal activity in certain departments?

One or several products, models, etc.: in other words variety and diversity in production.

Subassembly work and part storage, either produced or purchased; this includes inspection and other checking.

Seasonal or steady business: provision for acute peaks of activity such as Christmas trade; frequent rearrangement to meet changing styles of product.

2. *Nature of process and equipment* involves provision for fumes, heat, and other such conditions, and also for special, bulky, heavy, noisy, or vibratory machinery (e.g., drop forges) which must be specially housed in order not to affect other processes. Special foundations may be required, or extra head room. Highly combustible or explosive operations need buildings of abnormal construction.

3. *Geographical location* affects the type of building, and particularly the materials used, so that the plant may be protected against conditions of temperature, humidity, wind, insect attacks (such as termites).

4. *Economy in movement of material* requires attention to elevators, conveyers, trucks, receiving, shipping and storage facilities, particularly for bulky or heavy materials, or in processes involving much repetition of moving operations. Modern automobile plants, with their conveyer assembly lines, are a good example of such equipment, necessarily considered in building design.

5. The location of department offices and general plant arrangement to facilitate *control of activities* is of lesser importance; particularly in large plants, adequate production and incentive systems accomplish more than a foreman's unobstructed view of his floor.

6. *High land values* lead naturally to multistory buildings, and *vice versa*; such elements of building design as heavy walls, space between buildings for light and ventilation, etc., may be affected by high property costs.

7. *Permanence* often determines building character; temporary or easily alterable types are natural in an uncertain industry, perhaps even portable buildings. High-grade construction means not only greater initial cost but usually more difficulty and expense for alterations. It may be feasible, however, particularly in urban or suburban locations, to erect a plant suitable for the average industry, and therefore having a *high resale value*, without sacrificing any desirable elements for the particular original purpose. Modern types of buildings are affected more by obsolescence than depreciation; the real life of steel, brick, and concrete structures is not known, but depreciation is usually based on fifty years' life.

Specific types of buildings may be classified by:

Number of stories.

Type of walls.

Type of floors.

Type of roofs.

Single-story buildings are applicable (in a very general way) to:

- Inexpensive land.
- Sites amply large for expansion.
- Heavy materials or machinery, or severe vibration, or conditions requiring great solidity.
- Need of liberal ventilation.
- Floor areas greater than 80 to 100 feet in least dimension.
- Hazardous work, best isolated, and not above or below other operations—perhaps involving fumes, heat, etc.
- Greater flexibility of layouts, subassembly work, etc.
- Better supervision and coordination than several floors under one control.

Many of the advantages formerly claimed for single story buildings have been eliminated or much reduced by improved material handling (conveyers, power trucks, high-speed elevators, etc.) which may result in lower factory costs in a multistory building than in a single large floor area.

Improved building construction has made *multistory buildings* available for relatively heavy work; such buildings (besides the converse of considerations outlined above for the single-story type) may be:

Useful for manufacturing layouts permitting vertical transfer of work in progress (in many cases by gravity) or requiring no transfer between departments.

More free from street or yard noises, dirt, etc., particularly in cities.

Designed for vertical expansion by additional stories (particularly with flat-slab roof construction).

Equivalent to single-story conditions in the top floor on sites having considerable slope, permitting access at grade to upper floors.

As a rule, multistory construction (at least up to four- or six-story buildings) costs more per useful square foot than single story, but less per cubic foot for equal quality; a fair comparison must include stairs, elevators, extra wall thickness, etc. A very rough figure for moderate-sized single-story buildings of good quality is \$3 per square foot, twelve feet high, or 25 cents per cubic foot. Maintenance and operating expenses (heat, paint, roofing, etc.) are usually less for multistory buildings. The trend seems to be toward single-story structures, particularly for small plants. In many large plants, a happy combination of the two types can be made, using single-story buildings for heavy assembling and multistory for parts manufacture, offices and laboratories. Very effective plant arrangements can be made with alternate rows of single- and multistory structures, with roads and railroad sidings between (Fig. 1), or with continuous floor space on the first floor (Fig. 2).

Types of Walls. *Wood* is chiefly suitable for temporary or very small buildings, is comparatively short lived, combustible, and has little salvage value.

Metal (corrugated or other sheet construction) is useful for portable or small buildings, quickly and cheaply erected, non-combustible, and has fairly high salvage value. Such buildings are difficult to heat and have little strength as all loads must be carried on the supporting frame.

Brick is solid, durable, and adaptable to nearly all sizes and heights, easier to repair or alter than concrete, but has become more and more expensive

due to high labor rates. "Mill construction," with heavy brick walls and massive wood beams and floors, has been extremely satisfactory for multistory buildings. It is slow burning, useful for nearly all industries having moderate working loads, and altogether practical. It has become less used, not because

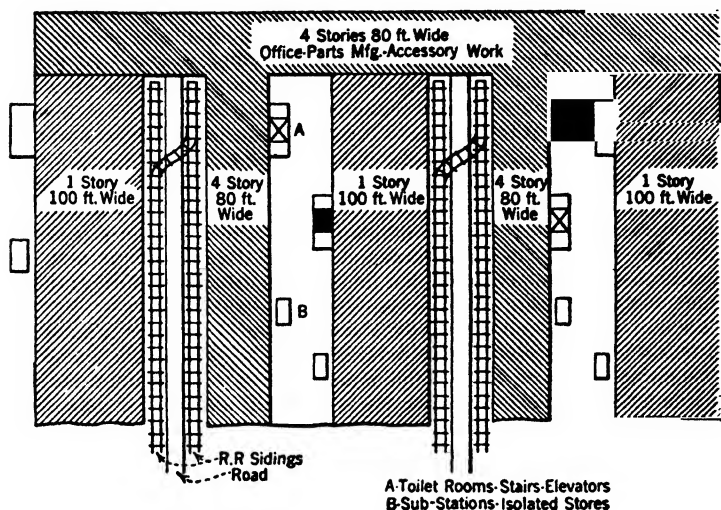


FIG. 1.

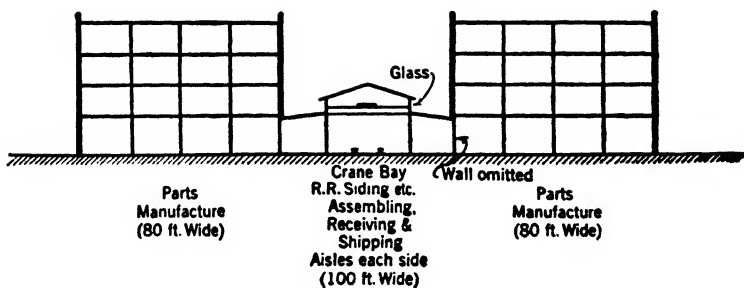


FIG. 2.

of inherent defects, but due to decreased relative cost of concrete and steel compared with wood and brick. For multistory buildings, brick walls unsupported by steel are extremely thick, reducing useful floor areas; then, too, this type of construction cuts down available window space because of necessary pilaster widths.

Hollow tile is extremely useful for small buildings, interior walls, or curtain walls of steel frame buildings. Its use reduces labor costs of construction materially. Tile has never been considered as good a fire retardant as brick, but it is being improved in this respect. As a heat insulator it is excellent.

Concrete or brick and steel (so-called "fire-proof construction") is the accepted type for multistory, and for many single-story buildings, having strength, economy of space, unlimited application as to height or area, good appearance, durability, and resistance to fire. The steel frame can be designed for any desired loads, and the walls serve only as weather protection and heat insulation. Such construction is relatively expensive but is easier to alter than solid brick or concrete. Reinforced concrete (without a separate steel frame) requires more thickness and is harder to repair or alter, but is well adapted to heavy buildings (such as warehouses) involving few changes in occupancy. The term fire-proof is a misnomer; brick, steel, or concrete is not immune to intense fires, particularly with severe exterior exposure or highly combustible contents in large quantities. Even with the best construction possible, fire protection and prevention authorities will urge sprinklers, fire walls, and other precautions.

Glass and steel (so-called "daylight construction") involves a structural steel frame with practically continuous glass walls, perhaps for almost the full height of each floor. While this gives excellent daytime light transmission, it is difficult to heat, and expensive to maintain, since glass requires more cleaning and repairs than brick or concrete. With increased reliance on artificial lighting, less value is attached to such construction, particularly for work involving night as well as day shifts. A certain amount of wall or pilaster area is useful in most factories, and glass area can be overdone as well as underdone. One large factory building is now under construction without any windows at all.

Types of floors selected should be:

Suitable for the machinery and process (fire hazard, dust, acids or alkalis, etc.)

Durable, with low maintenance.

Comfortable for workers, particularly if much standing or walking is necessary, or if women are employed.

Reasonable in cost.

Concrete has many obvious advantages and is widely used, but it is uncomfortable and tiring to stand or walk on, and may (unless laid with proper precautions) wear sufficiently to allow dust or grit to get into fine machinery. Such floors are difficult to cut for piping, wiring, machinery installation, etc. In multistory buildings, concrete floor slabs should have inserts provided during construction, to permit attachment of sprinklers, shafting, etc., on the ceiling below.

Wood block floors require a concrete base and are therefore expensive but are admirable in most respects, particularly for heavy work, long lived, quiet and comfortable. Vibratory machinery should be fastened through the blocks to the concrete below.

Wood plank with hardwood surface makes an excellent floor, particularly for light work but is increasing in cost compared with concrete. Machinery installation, cutting for piping, etc., is easy and inexpensive.

Asphalt, mastic and other special surfaces are applicable to wet, corrosive or other peculiar conditions.

In buildings with sprinkler systems it is desirable to provide floor drains or scuppers to the outside, to avoid excessive water damage in lower floors of multistory buildings. Where plant layouts are known at the time of construction, a permanent aisle marker can be set in the floor, to aid in orderly operation. Floors and walls should be integral, or tightly joined, avoiding baseboards or moldings, which are dirt and bug catchers. Wood floors should be tongue-and-grooved, side nailed, preferably with mopped roofing paper between planks and flooring, to keep the floors tight against dirt and water. Elimination of slipping hazards is important in many plants, and many methods are available to suit various conditions. It is extremely desirable to plan underground piping, ducts, sewers, etc., to be outside buildings wherever possible, and to be adequate in size and construction, so that costly and embarrassing changes may be avoided during operation of the plant.

Types of Roofs. *Flat roofs* (with or without a slight pitch for drainage) are least expensive in first cost and upkeep, but do not permit good natural lighting of building interiors more than sixty or eighty feet wide. Many multistory buildings now have dead-flat roof slabs, permitting additional stories to be built without disturbing the slab. The water standing on such roofs materially reduces heat transmission, thereby keeping interior temperatures more steady.

Peaked roofs are rarely used for factory buildings, except minor sheds, etc., of light construction.

Monitor roofs provide excellent construction for medium- or large-sized buildings; moderate in expense, satisfactory in lighting distribution if properly designed, and reasonable in upkeep cost. Such a design is particularly good where heat, smoke fumes, etc., must be exhausted, e.g., foundries and drop forges. Monitors are admirably adapted to cranes, railroad track bays of a large building, and other needs of high clearances.

Sawtooth roofs have been used extensively for textile, printing, and other industries requiring good and even light, the theory being to face the sawtooth windows north, avoiding direct sunshine and glare, and getting the comparatively uniform cloud-reflected light. Such construction is initially expensive and high in maintenance cost, difficult to heat, and usually no more satisfactory than a properly designed monitor type.

Roof-deck materials are: plank; concrete, often of specially light construction; sheet metal, including galvanized steel, copper, lead, aluminium, etc., in continuous sheets or shingles; asbestos or other prepared sheets; tile. In addition to cost and permanence, heat insulating value and resistance to fire should be considered.

Covering surfaces include: felt mopped with tar; asphalt or pitch, with or without a gravel or slag top layer; composition or ready roofing; sheet metal; asbestos. Each has its advantages. A plain mopped asphalt and felt

covering on well-dried, tightly laid, and adequately supported plank decking, tongue-and-grooved or splined, is very satisfactory for the average case.

Discussion of other details, such as *windows, doors, columns, stairways, elevators*, etc., is beyond the scope of this article.

Special Provision for Unusual Equipment or Processes. In connection with building design and arrangement, it is well to provide for such items as: special machinery foundations, moisture proofing of floors or walls, adequate aisles, doors, elevators, etc., for the largest and heaviest machinery or product, conveyers, cranes, and other such facilities, and particularly underground services or elements involving building changes if installed after the initial construction. Where electric trucks are to be used, nine-foot width for main and five-foot for branch factory aisles is ample. In general main doorways eight feet wide by eight feet high are satisfactory. Where special processes involve splashing of water, oil, or chemicals, (e.g., electroplating) considerable difficulty and expense in subsequent maintenance can be avoided by providing at the outset an impervious floor, which will be unaffected by the conditions to be met. A general-purpose building, of usual design and construction, is not likely to be suitable for all sorts of operations without some modifications, many of which are best made during the original construction.

Building Accessories and Special Features.

1. Heating, ventilating and conditioning.
2. Power, electric and steam.
3. Illumination.
4. Sanitation and waste removal.
5. Fire prevention and protection.
6. Water supply.
7. Offices, warehouses, and other special buildings.

1. Heating, ventilating and conditioning means:

Proper quantity of air to be supplied, distributed, and discharged.

Proper temperature and humidity to be maintained.

Proper quality of air to be assured—reasonably free from dust, odors, bacteria, etc.

These are increasingly realized to be important, both for health of employees and quality and uniformity of product. The most desirable temperature, humidity, and rapidity of air change varies with types of work and workers (active or inactive, men or women) but for any given department uniform conditions are desirable. Temperatures should be regulated at the working plane (say three to five feet above the floor); cold drafts along the floor should be avoided. In general, 65° to 68°F. with 50 to 60 per cent relative humidity is desirable; with lower humidity, a higher temperature is necessary for comfort.

Heating systems most commonly used are:

a. Direct: radiators, pile coils, etc., exposed on building walls or ceilings. Such a system is low in first cost, involves no power and little maintenance expense, but is ineffective for large areas due to poor heat distribution and contributes nothing to adequate ventilation. If the radiators are installed

on the walls below the windows, they take up valuable wall space, and are often blanketed by machinery, benches, bins, etc., so as to greatly reduce the heat emission. If the radiators are put overhead, there is no tendency for heat to reach the working plane near the floor, with the result that the ceiling must be overheated to secure comfortable temperatures below.

b. Indirect: central heaters with duct distribution to the working areas. This method is much higher in first cost and requires power and maintenance for blowers and motors; but gives excellent heat distribution if properly designed and can also furnish adequate ventilation and conditioning. In reinforced concrete buildings, the columns and beams or pan-construction floors can be made hollow to serve as distributing ducts. Exposed sheet metal ducts are bulky and often interfere with overhead shafting, etc. Alterations to such a system are not easy.

c. Unit heaters: small heating units and fans distributed throughout the area have increased rapidly in popularity. They are moderate in first cost, reasonably low in maintenance and power expense, flexible for operation and rearrangement. Such heaters can be located overhead, out of the way, and yet direct the warm air to the working plane, including the necessary provision for fresh air supply. These unit heaters are usually extremely compact and light.

Ventilation is particularly necessary where fumes, dust, or vitiated air are prevalent; minimum requirements are often prescribed by state labor codes. In general, thirty to fifty cubic feet of fresh air per minute per person is desirable. Some change of air can be expected due to opening and closing of doors, operation of elevators, etc.; the remainder should be secured by natural means such as windows, ducts, and stacks, or mechanical means such as fans for supply or exhaust.

Conditioning of air more or less closely controlled, is required for process reasons in many industries, such as textiles, food stuffs, woodworking, and paper. The necessary equipment has been developed to a high order of precision and applicability. Each problem merits individual study by specialists. Aside from the needs of a particular industry, some humidification of air is desirable from the standpoint of employees' comfort and effectiveness.

2. *Power (electric and steam)* includes such items as compressed air, refrigeration, and water (for which see 6, below) besides steam, electricity, and mechanical transmission equipment.

The first question confronting the plant management is whether to purchase or generate power. The general trend is away from isolated electric plants, and even from steam plants where, as in some large cities, it can be bought from a public utility. Reliability of service requires skilled supervision, adequate maintenance and repairs, and reserve equipment; all of these items and the capital investment for normal needs cost more in a small isolated plant than in a large central station. In some industries it is possible to schedule electrical loads largely during off-peak periods of the utility company, as in the case of electric furnace operation or water heating at night, with consequent low rates. On the other hand paper, textile, laundry, chemical, and other such plants, with the opportunity to use for process purposes

exhaust steam or condensate from the power plant, can often justify their own power generative equipment. The basis for a sound decision is a careful heat balance study, leading to true estimates of generated power costs, compared with a definite contract for purchased power submitted by the utility company, in which all factors are evaluated, such as coal, power factor, and demand clauses, and ownership of transformer and switching equipment.

If electric power is to be purchased, and no imperative need exists for high pressure steam, it may be desirable to install low pressure (say fifteen pounds per square inch) boilers, to reduce initial cost, to eliminate the need of accessories and safeguards prescribed by many state laws for high pressure boilers, and to avoid the need of specially licensed engineers and firemen similarly required by law.

If air compressors, refrigeration equipment, water pumps, or other such machines are needed, there is an opportunity to use either high pressure steam, electrical energy, or both, installing and operating that combination which gives the most economical results—perhaps steam engines or turbines in winter, using the exhaust steam for process or heating services, and electric motors in summer. A demand clause in the electric power contract, however, makes seasonal variations in load uneconomical, at least in cost of purchased energy.

Refrigeration systems are being used increasingly in connection with air conditioning equipment, besides the direct process needs for food products.

Water supply is discussed below.

The discussion of power plants is beyond the limitations of this chapter. Among the elements with which the management may be concerned are: disposal of ashes; control of cinders and smoke, possibly regulated by local ordinances; selection of economical sizes of units, with provision for future expansion; storage of reserve fuel; proper cost distribution to plant departments; and periodic analysis of total and unit costs.

3. *Illumination* is an important item from the standpoint of quality and quantity of production, and freedom of employees from eye strain. Adequate lighting has been proved to increase production as much as 25 per cent in some cases, and to reduce waste, spoilage, seconds, and other such losses even more. Proper design of a lighting system involves consideration of:

Intensity (quantity).

Color.

Distribution (evenness).

Diffusion (absence of glare).

Steadiness or uniformity.

The desirable intensities and types of lighting units for various sorts of work are available in reference books. In general, modern practice uses higher lighting intensities than was common a few years ago, say five to ten foot-candles for average work. The trend is also toward fewer and larger units. Many state labor codes prescribe certain lighting features, such as keeping the source of light out of the line of vision by proper reflectors and mounting heights. Light colors, such as white, cream or gray, are desirable for walls,

ceiling, exposed steel work, and even machinery or benches, as an aid to good lighting. A flat or eggshell finish is desirable to avoid glare. Incidentally, such an interior surface raises morale and promotes cleanliness. It is desirable to locate the lighting control switches centrally, controlling rows of lights parallel to the windows; the foreman, or some designated supervisor, can save considerable lighting cost by controlling lights as needed; individual workmen will seldom bother to do so. If the factory areas are not regularly used at night, a few small lights on a separate circuit should be provided for the use of the watchmen. Regular cleaning of reflectors and replacement of lamps as they become blackened is important; as much as 50 per cent of the normal lighting intensity may be lost by not doing this.

With natural lighting through plain glass, the intensity drops rapidly with increasing distance from the windows; to reach effectively the interior floor areas, the light must be diffused by ribbed or prismatic glass used for the upper window panes, with clear glass up to say five feet above the floor. The diffusing glass should be chosen and set so as to be cleaned easily, preferably with the irregularities outside and the cleaning partly done by rain. North light is most free from glare and most uniform regardless of the season or weather, since most of the natural light comes from sky or cloud reflection. Saw-tooth windows give good light if well designed and cleaned, but are not superior to monitor construction, all things considered.

Shafting, countershafting, belting, etc., interferes with good interior lighting. In making factory layouts, bench operations like assembly, inspection, and other fine work should be located in the best light, preferably near the windows. On the other hand, operations requiring absolutely uniform light and color, such as inspection of textiles, may require 100 per cent artificial light.

4. *Sanitation* includes provision of necessary toilet facilities and disposal of sanitary and process wastes. Many state labor codes prescribe in detail the number, location and restrictions of sanitary facilities, even including special washing facilities for employees handling poisonous materials. These regulations may include such items as drinking cups, towels, and soap. It is important to provide in the initial plans and construction, space and sewer connections for the maximum number of fixtures expected to be required in both men's and women's toilet rooms; only a part of the equipment may be installed initially, but expensive later alterations will be avoided thereby.

For effluent disposal, both process and sanitary, the public authorities should be consulted if a sewer connection to the public system is desired. There are usually restrictions against hazardous, corrosive, odorous, or abnormally hot or cold matter, unless properly diluted or treated. Special provision may be required to prevent stoppage or facilitate cleaning of plant sewers. In many cases, storm water and sanitary or process sewage must be handled through separate sewer systems. The protection of streams from pollution by industrial waste is receiving more and more attention, and the subject merits careful investigation by plant authorities to avoid later embarrassments.

It is a great advantage in many plants to have on the property or near-by, low ground for disposal of solid waste such as cinders, foundry slag, and other

solid waste. If such ground is to be used later for factory buildings, the filling should be done carefully to avoid excessive settling. Combustible solid refuse, such as waste paper and wood, may be burned in incinerators or, if the quantity is sufficient, under special boilers. Some plants generate an appreciable portion of their steam requirements from waste fuel. Refuse handling should be done, in general, with minimum transfer between containers, i.e., the material should be accumulated in the same trucks, trailers, cans, or boxes in which it is taken to the point of final disposition. Each item of industrial waste material should be scrutinized for possible salvage.

5. *Fire prevention and protection* is naturally coupled on an operating basis with safety, maintenance, and police functions, also with the activities of a plant inspection committee if this exists. Much good advice is obtainable from fire insurance organizations, particularly those specializing in industrial risks. Insurance rates can be lowered considerably by proper design, construction, and housekeeping; sufficiently to warrant a good deal of attention and expense in large organizations. Even with good plant construction, materials and accessories often involve enough combustible matter to be dangerous, e.g., paper and perhaps furniture in offices; wood, cardboard, etc., in packing and shipping rooms; paints, oils, and finishes in various departments. Wherever possible, the bulk of such commodities should be stored outside the factory buildings; likewise finished or semifinished parts of inflammable character.

It is not practicable entirely to avoid combustible construction, but rigorous insistence on good standards of order and accessibility to the fire fighters, with provision of adequate sprinkler and extinguisher equipment, and sufficient training of employees to cope with emergencies will usually prevent major disasters. Preventing rather than stopping fires is the desirable course.

Some one person in a small plant, or a fire chief and organized brigade in a large plant, should make regular inspections of the factory, particularly of protective equipment, and submit written reports and recommendations to the management. The fire brigade should have regular drills at stated times, with at least occasional practice in extinguishing actual fires, such as in yard rubbish. Extinguishers, hose, and fire-alarm system should be tested periodically, with written and signed records kept of conditions found. A definite report on a prepared form should cover each actual fire, the essential features besides the description of the fire itself being: probable cause, preventive action subsequently taken, and further safeguards recommended. Preventive measures, based on actual trouble, and adequately covering each particular case, will gradually eliminate likelihood of trouble. Cooperation with local public fire departments is very desirable, perhaps to the extent of inviting occasional inspection and advice, certainly assuring interchangeability of connections for hose and hydrants, although most large plants prefer to handle with their own organizations any ordinary fire.

One very important point is salvage of machinery, stock, etc., after a fire, to prevent delays in production and get operations quickly back to normal. Tarpaulins, sawdust to soak up water, and other such items should be part of the equipment of the fire brigade or salvage corps. Fire drills for the

factory employees should include definite assignments of individuals to close windows and doors, protect important equipment or material, establish fire lines and keep order.

6. *Water supply* may be public or private; the usual industrial requirements besides process needs are for power plant, fire protection, drinking and washing. A supply from the public system has the advantages as a rule of assured and consistent quality, reasonable pressure without pumping, and elimination of duplicate piping systems by using the one service for all needs. For ordinary plants, with moderate use of water, a public supply should be the most economical and satisfactory. Inquiry should be made, however, as to reliability and quality of such water. Private water systems may come from rivers or lakes, wells, or perhaps sea water for certain cooling purposes, as for condensers. Pumping and filtering equipment, with storage reservoirs in case of intermittent use, are usually necessary. Certain processes, such as those for paper, textiles, and food-stuffs, require water within definite limits of quality; sulphur, dissolved salts, acidity, or alkalinity are important. Water for steam boilers is subject to similar limitations; as a rule artesian well water is not suitable for boiler supply, while it may be admirable for making beverages or other process purposes. Drinking water must, of course, be reasonably pure from a bacteriological, as well as chemical, standpoint; the state boards of health and other public authorities enforce rigorous standards and test such water. In some cases the need of refrigerating drinking water in summer can be avoided by permitting a slight flow at the drinking fountains or from the end of the main. In general it is not permissible to connect public and private water systems, or raw water mains with those for drinking water, without thorough safeguards against back flow into the purer system; even the best of such safeguards are none too satisfactory.

For fire protection, sprinkler systems, hydrants, fire-pump supply, etc., the water supply must be adequate and reliable. A reservoir or gravity tank is usually required, with piping arranged as a loop, grid, or multiple feed. The criterion of adequate pressure is sufficient supply to the highest floor of the building. Underground water piping should be buried deeper than the frost line, minimum depth varying with the locality; such piping is expensive to change and should be installed amply large at the outset, with due regard to possible future plant development, that is the depth should depend on grading or excavation expected.

7. *Special buildings* such as offices and warehouses deserve a few general comments. *Offices* should be centrally located, with convenient access from the street for visitors without passing through factory areas. A separate building is usually desirable, except in small plants, to protect office work against noise, vibration, fumes, etc., from the plant, and keep office people from too much contact with the shop. On the other hand, production and engineering records, blueprints, order information, and the like should be conveniently accessible from the plant, to avoid the need or excuse to build up duplicate files and do extra paper work in the shop.

Warehouses for raw material and finished product, separated from manufacturing buildings, are desirable in large plants, for safe and convenient storage and shipping of product; such arrangements are, of course, particu-

larly necessary where the business is seasonal, requires lot manufacturing for stock, or involves a large number of raw or finished items. Lower insurance rates on material stored may be expected on this basis. The warehouses should be arranged for minimum movement of material, and easy inventory and selection of items; raw material can be carried in lots convenient for plant use, perhaps in tote boxes or on truck skids; finished product can be stored in shipping containers. It may be possible to use conveyers to and from the warehouse and cars or shop. Large warehouses should be divided by fire walls, with about 5,000 square feet per section.

Shipping and receiving areas may be housed with the manufacturing space or the warehouse. Among the desirabilities are: space and facilities for checking consignments, perhaps for inspection, or for holding a particular lot while a few samples are investigated; protection against pilfering; sufficient space and facilities to load or unload cars without demurrage; perhaps parcels post, express, truck, boat, or other transportation facilities. Analysis of the character and volume of material handled will usually indicate the applicability of some labor-saving appliances, such as overhead hoists or cranes, conveyers, hand or electric trucks, special scales, wrapping machinery, or the like.

Construction and Installation. Except on minor projects, or where a sustained construction program justifies a standing organization for the purpose, it is not usually desirable to attempt *design and erection of factory buildings* within the industrial concern's personnel. Such work, particularly construction, requires a force of men not normally usable during plant operation. The interrelations of the building trades are complicated and often difficult to handle and the situation is affected by labor union conditions which are particularly strong in the building trades. It is rarely practicable to develop rapidly the necessary working and supervisory force, tools, etc., within the plant, and to disband them at the end of the job. Consequently industrial construction work is usually handled by outside architects, engineers, and/or contractors.

On the other hand, *installation of machinery and equipment* is often handled to better advantage under the supervision of the plant engineer or master mechanic by his own men, perhaps including branch piping and wiring, benches, material-handling equipment, and the like. It is sound practice to have the initial installation of machinery made wherever possible by the men who have to keep it going; maintenance work is likely to be reduced thereby.

An excellent arrangement is to have the outside architect or engineer provide for supervision of the construction work from the owner's standpoint, by means of a resident engineer, and let the individual contracts, thus eliminating a general contractor's profit. However, for extreme speed, or with a very large number of separate subcontracts to be interrelated, a general contract on a bonus and penalty basis may be preferable. The normal duties of a resident engineer are to:

- Coordinate various contractors.
- Interpret plans to these contractors.
- Supervise construction operations.

Expedite work and develop schedules.
Approve work and turn it over to owner.

Such duties may be handled by the plant engineer, if his other responsibilities permit.

An important element is scheduling of the construction, as a means of planning the job itself, and to inform the owners when a part, or the whole, can be turned over to manufacturing. Weekly progress reports are desirable, showing per cent completion of each item on the master schedule; each major item of work should be plotted separately, including necessary material. In many ways, the hardest part of a construction job is the final clean-up, removing surplus material, tools, etc., and bringing the work from 99 to 100 per cent complete. This stage of the job includes checking and acceptance, so that both owner and contractor have a clean cut knowledge of the time when responsibility is transferred.

When additions or changes to an existing plant are to be made, with the minimum interruption to manufacturing operations, a definite understanding should be reached as to areas open to contractors, use of shop facilities such as power, sanitary, and tools, handling and storage of material, including use of railroad sidings, and general plant regulations such as smoking. In many cases it is desirable to fence off the construction area from the operating area, using a separate entrance.

The desirable basis of any *construction contract* is one that is fair to both sides, owner and contractor. If the contractor finds himself working at a loss, there is too much temptation to save money by slighting the work. The trend is toward standard forms of contracts for various elements of the work, with the advantage of uniformity, elimination of "trick" clauses, etc.; these are sponsored by American Institute of Architects and various trade organizations such as steel and concrete. There are several forms of construction contracts, each suitable for certain conditions.¹

A considerable saving in construction cost is possible by wise selection of the *proper time*. Within recent years there have been wide fluctuations in supply and demand of labor and material. Winter or off-season building is being encouraged by improved construction methods and often shows a saving. While a large job is underway, minor or supplementary work can be done economically by the use of contractors' organization and equipment.

¹ See ANDERSON, ARTHUR G. "Industrial Engineering and Factory Management," pp. 98-101, The Ronald Press Company.

CHAPTER IV

PLANT LAYOUT

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It is safe to say that at least 75 per cent of all plant layout work is primarily a problem in cutting the suit to fit the cloth. Occasionally, of course, the engineer is allowed to proceed unhampered—even to the extent of designing the building to suit the ideal layout. But usually his problem is to work out a new layout of machines and equipment for an existing plant. Even with a new building there usually are hampering conditions determined by the shape of the lot, the location of transportation facilities and so on. Thus it is frequently necessary to work out the best practical layout for a four story plant when the ideal condition would be to build that particular product in a single story plant, or *vice versa*.

But even so it is usually possible to devise highly efficient layouts despite such obstacles, provided the engineer has a clear-cut conception of the types of production and of certain fundamentals that underlie all production.

In this chapter we are treating the majority of cases where there are hampering obstacles. Once the engineer understands how to plan layouts under these circumstances, he will find no difficulty in laying out a new plant with no restrictions, should he ever be fortunate enough to encounter such a case.

The fundamental principles of plant layout as they are described in this chapter apply to a greater or less extent no matter whether the plant is in the field of metal working, woodworking or what not. Because metal working shops present all of the problems and complications that are to be found anywhere we have taken our illustrations from metal working in this chapter. But the principles apply to shops turning out any kind of product.

Layout Depends on Type of Production. We have seen in Chapter I that production in which machines are used is of three fundamentally different types. They are: *mass production*, where large quantities of a single or at most a very few varieties of goods are produced by repetitive means; *job production*, in which no jobs may be exactly alike and long runs on a single product are unknown; and *job mass production*, under which a plant or part of a plant may run for a comparatively short time on a single product, simulating mass methods but which must at intervals change over to some other product usually similar in nature which is again turned out for a while.

Because of changes in style of product and the desire to diversify a company's "line," the majority of factories come under the category of job mass

production. There are practically unlimited graduations from the plant which closely resembles mass production to the one at the other extreme which partakes mostly of the strictly job shop. The plant layout will naturally reflect the nature of the production, provided, of course, that the engineer who designs the layout is competent and realizes the nature and peculiarities of the problem.

Functionalized Departments. In pure *job production* strictly functionalized departments are the rule. That is to say, taking a machine shop as an example, there will be a department containing no productive machines other than drill presses, another given over entirely to lathes of various sizes and designs, all planers will be in another group, there will be a department that does nothing but grinding work and so on. Because of the fact that the output will be highly varied in nature various sequences of operations will be required and therefore a certain amount of back tracking will be inevitable. Consequently the location of departments is not of such surpassing importance as in the plant which will operate on a mass, or modified mass, basis. The principal thing is to make certain that ample provision is made for trucking aisles and storage space in the departments, for goods in process. It is, however, easy to avoid such ridiculous errors in laying out a job shop as placing the grinding operation which is always one of the later operations next to the raw material stockroom.

Even in job production it is often wise to separate heavy duty and light duty equipment of the same kind into two separate departments and to locate them properly so as to reduce hauling and trucking.

Under job production it is also sometimes wise to separate roughing equipment from finishing equipment in a department or if the shop is large enough to make separate roughing and finishing departments. The class of labor and the tolerances in the latter instances are different.

Multiunit Plan. In *mass production* most of the departments will be laid out on the line or, as it is often called, the multiunit plan. That is to say several machines of different types will be arranged to perform in proper sequence the various operations required on a particular part of the product. Thus a single production unit may comprise a multiple drill press, three planers, two milling machines and four grinders, each performing its particular operation in its proper order. The unit would work on its product and nothing else. The proper grouping of the various units would comprise the line of production, that is, the assembling and correlating of unit productions. Several groups may pour their product into the main line at various points. A group may in some cases be a department in itself.

While we have mentioned specifically machines which can be used on various products it is often the best practice in a line department to use special purpose machines. This phase of the problem is, however, discussed in detail in Chapter V, Machinery and Equipment.

Combined Functional and Line Departments. In a plant which is to operate under what we have called job mass production it may be advisable to have both functional and line departments although in certain cases which closely approximate pure mass production it may be possible to set up nothing but line departments.

Suppose a plant were to make nothing but rear axles for automobiles, that the basic design of all these axles would be the same, but that minor variations were necessary to meet the needs of the various customers. In such a plant it probably would be possible to lay out the plant with nothing but line departments making necessary changes in tooling when production was changed from one type of axle to another.

On the other hand consider the problem that was presented in designing the layout of a plant which was to produce electric refrigerators. It was known that from time to time there would be engineering changes in the refrigerators which would naturally affect the operation to be performed, while other parts of the product, it seemed likely, would be unaffected. The parts subject to change were therefore made on practically a job basis in functional departments while for those parts unlikely to be changed line departments were set up. The assembly department was also laid out on a line basis because the changes would not affect the assembly as a mass operation.

Breaking Down a Functionalized Department. In a plant that operates on the job mass production basis it is often desirable to break down what would normally be a functionalized department into links in two or more line production groups.

Thus in one plant there were four different parts entering into entirely different subassemblies that had to be tinned. Since tinning is a process that requires a certain degree of skill especially in supervision, the usual practice was to have a central tinning department through which all parts to be tinned passed. There were certain obvious advantages to this plan, but there were also certain apparent disadvantages, chief of which was the necessity of breaking into what were practically line set-ups designed for mass production in order to haul the parts to the tinning departments and back.

Analysis of the problem, with special attention to the relative costs of equipment, trucking and delays to production, showed that it would pay to divide the tinning between the four departments and maintain a smooth flow along mass production lines. The equipment for four separate tinning sections cost more than the equipment for a central department of equal capacity, but the saving in trucking and lost time more than made up for the increased investment.

The foreman of the old tinning department was given supervision of the four tinning units under the foremen of the various departments.

Dealing with Heavy or Bulky Parts. When analyzing the product to determine whether it shall be made by mass, job or job mass methods it is also essential to consider the weight and the bulk of the various parts. It is evident that it is much more expensive to move a bulky or heavy part than a light, small one, especially if the movement is up and down.

In designing a plant layout great economies are realized when the heavy and bulky parts, like sediment, stay at the bottom. Therefore in a multi-story factory the capable engineer will resort to many ingenious expedients in order to keep all of the processing of heavy parts on the ground floor, where they are usually received and from which they are shipped.

There is another advantage to this aside from the saving in handling cost. Operations on heavy parts are usually performed on heavy machines. On the ground floor it is possible to secure ample foundations for heavy machines at much less cost than would be entailed on upper floors.

In processing plants such as chemical industries it is not always possible to avoid elevating heavy materials. The equipment itself must sometimes be two or more stories high and the materials fed in at the top, passing through the process by gravity. This is one of the cases where the nature of the equipment determines the layout—not at all a universal condition.

Flow of Materials. When it is known which parts should be processed on the ground floor and which can properly be raised and lowered at a not excessive cost the next point to determine is the flow of materials.

A common mistake is to postpone that until, either by cut-and-try or by wholly arbitrary means, a more or less tentative layout of the departments has been fixed. I am convinced that that is putting the cart before the horse, and that the proper starting point is to lay out the channels through which the materials will move. Despite the fact that it is often said to be impossible, I know from experience that it can be done and that the final definite plant layout will be far more effective.

While it might be highly desirable to take raw materials into the plant at one end and route the product straight through to the finished stock room and shipping platform at the opposite end, that may be out of the question due to the fact that the only available space for the railroad spur is at one side of the plant. In that event, if all receipts and shipments are made by rail, it will be necessary to bring the material in and take the finished product out at the same side of the factory. Therefore the line of flow cannot be in the ideal straight line but must be designed as a circulating system.

Traffic Lanes. It is to be remembered that in any plant there is not only a primary flow of materials through the factory but secondary movements as well. Once the general, primary flow of materials through the plant has been determined, the next thing is to lay out the general traffic lanes. These should, where possible, be in a straight line.

The traffic lanes may be laid out on floor plans. But a better method, because it aids in visualizing the layout, especially if the factory has more than one story, is to build a dummy floor plan of the plant on which the traffic lanes and the actual equipment, productive and non-productive, can be shown to scale. This is particularly valuable in securing the advice and suggestions of the foremen, who frequently have worthwhile practical ideas. The average foreman may have difficulty in visualizing a layout from process charts but he can easily do so from a dummy floor plan.

Let us take as a typical problem a certain factory three stories high, with a total floor area of fifteen acres. The first step was to lay down the traffic aisles for the primary material flow as closely as possible to the center of the buildings. These were laid out before any of the productive departments were located, although the raw material and finished goods storerooms had been located.

These initial lines are almost certain to be changed here and there before the final layout is determined, but it is important to resist those changes to

the utmost lest the whole layout become a twisted maze of back tracking and crossing lanes which would make efficient moving of materials impossible. Before a change in the original layout of primary traffic lanes is permitted it pays to make the change justify itself beyond any possible doubt. In the example it was necessary to move one lane from the center of the building to a point about one-third of the width of the building from one side. Another was moved nearly to the wall, and certain other minor changes were allowed, yet when the final layout was established, the basic plan was surprisingly like the original tentative layout, so far as the primary movement of the materials was concerned.

Whatever changes are allowed it is essential to remember that primary flow must be kept open regardless of what final arrangement of departments and secondary flows are determined upon. The primary flow should be emphasized constantly in all of the layout work.

It is surprising to what extent a properly laid out primary-flow plan will reduce the amount of material-moving equipment required. In one fifteen-acre plant less than 200 trucks are required as a result of scientific, well-planned layout, and automatic conveying equipment is negligible.

Layout of Departments and Storerooms. When the primary flow through the plant is determined and the choice of mass, job mass, or job methods is settled, it is possible tentatively to indicate on the plans the general location and space requirements of the various departments, as well as the storerooms for raw materials, semifinished parts, subassemblies, and finished stock.

Sometimes the areas required will not fit into the general plans and it will be necessary to do some juggling and close fitting, keeping in mind that the provisions for primary flow of materials must be maintained. If the space allowance for a department must be reduced below what seems desirable or necessary for that department great care and ingenuity is needed. If more space is available than seems necessary for a department the problem will be simple because the department is then provided with room for growth with the gradual expansion of the business.

If space is not at a premium it is wise when making the departmental layout to allow for future expansion, taking into consideration which products are likely to increase in sales and how rapidly the expansion is likely to proceed.

Use of "Banks." In mass or job mass production it is desirable to provide at strategic points banks or reservoirs of finished parts or semifinished materials on account of possible delays in production due to machine breakdowns or other emergencies. In order to provide the right amount of storage space for these banks of materials it is essential that the severity and duration of possible stoppages be determined so that provision may be made for the needed amount of material.

Generally it is desirable to provide banks large enough to supply from one to six days' requirements of capacity production. For example, take the case of a product which is die stamped. The die is an expensive one which takes about two weeks to make. It would be possible to carry on hand a duplicate die, but it is cheaper to operate with only one and safeguard production by keeping a reserve bank of three weeks production of the part. On the other

hand if a machine can be retooled completely in twenty-four hours, three days reserve of the part made on that machine will be ample.

It is to be remembered that these are not theoretical reserves but actual physical stock which is set to one side and which does not get into production unless a shutdown in production occurs. It is possible that these banks may not be depleted for months.

This fact has a very real bearing on the layout of the plant. Since there is infrequent need to draw on the reserve stocks they may be stored in dark and inaccessible parts of the plant which could not be utilized otherwise, or they may be kept in the less desirable parts of the regular stockrooms.

The relative activity of different parts and materials is taken into account when designing the layout of the various stockrooms. Provision should be made for keeping the heavier items and those that are moved most frequently where they are most accessible. Often it is desirable to keep them on truck platforms in order to minimize handling.

Layout in Relation to Supervision. It is usually undesirable to locate departments primarily from the point of view of supervision. The uninterrupted flow of material in the logical order of processing is the primary objective of good factory layout—other considerations are usually secondary. It is a great temptation sometimes to locate two or more departments together merely so that they may be readily supervised by some particularly able foreman, but unless the other departments can be so located as to allow the materials to flow readily and freely to the adjacent departments the results will not warrant the deviation from correct principles. It is often cheaper in the long run to move a foreman comparatively great distances or to employ two foremen rather than one.

Repair Benches. In many types of production it pays to make provision at certain points along the production line for repair benches. In one instance that device shortened the assembly line 15 per cent. Wherever a partial assembly could be taken off the assembly line a repair bench was located. Then if any damage occurred to an assembly while on the line it was taken out of the line, repaired at the adjoining bench and replaced upon the line. Or if the repair could not be made so easily the assembly was taken apart and the good parts sent back to the beginning of the assembly.

Shapes for Secondary Flow. With the primary flow of material and the general location of departments determined, the next step is to lay out each department, keeping in mind that travel should be as short as possible.

Usually it is desirable to take material into the department and complete it as close to the main aisles of flow as possible. Often this is done best by having the secondary flow within the department follow a U-shaped path with the horns of the U at the main aisle. In some departments the path may be almost a perfect circle, the material leaving the department at practically the exact point at which it entered.

Under certain contingencies the best result is secured by having the materials follow an S-shaped path through the department, entering from one aisle and leaving at another.

The E-shaped path is often well adapted to production needs. In some cases two parts that are to be assembled may come into the department and

be processed on the top and bottom arms of the E, travel along until they meet at the middle arm, be assembled and pass out of the department over the middle arm. Again, especially if a department contains machines of widely different capacities, it may work well to have the materials enter the department in a single stream over the middle arm of the E and leave in two streams at the top and bottom arms. Such a case would be where the first operation was performed on a machine which has twice the production of the machine which performs the following operations. In that case the first machine would be on the middle arm and would handle all of its operation on all of the parts that came to the department while the subsequent machines on the top and bottom arms would each handle only half of the production of the department.

In making the detailed inside layouts of the individual departments it is of importance to consider the necessity of keeping the moving of materials as easy and cheap as possible. If the product is light it can often be passed by one operator who has just completed his operation upon it to his neighbor who will perform the next operation. Sometimes this can be done directly from machine to machine or from bench to bench. Again it may be necessary to have an intermediate truck or rack.

Spacing between Equipment. It is to be observed in this connection that spacing between machines is deserving of more accurate determination than it ordinarily gets. In the effort to have machines close for easy handling of material it is possible to make a department too crowded for efficiency.

On the other hand it is bad to have a preconceived idea as to the desirable distance between equipment. In one plant soldering benches were arbitrarily spaced three and a half feet apart. The parts to be soldered were pieces of pipe two and one-half feet long. It had been the practice for the trucker to put a supply of pipe on each soldering bench where they were in the way of the worker. The benches were put two feet apart and equipped with stops so that the ends of the benches could be used as racks, an end of the piece resting on each adjacent bench. In this way the benches were kept freer of material and the workers could perform their operations to better advantage.

Maintenance, Service Departments, Etc. It is desirable to have maintenance and service departments either in close proximity to the departments that are to be served, or centrally located. It is unwise, however, to disarrange production departments in order to locate service departments except in special cases where continuous and heavy repairs and maintenance are required, or where accurate and delicate adjustments must be made.

Clerical service departments should if possible be centrally located. This, however is not paramount. Wherever practical, departmental offices should be centrally located in the department or as near thereto as possible.

Wash rooms, coat rooms, etc., should be ample and usually adjacent to the productive department or group of departments. Another alternative is to have general coat rooms at the plant entrance with wash rooms close to the separate departments.

Ample provision should be made for railroad sidings, receiving and shipping platforms. These are governed by various conditions peculiar to each plant. Where large quantities of materials are received and shipped it is advisable to

enclose or partially enclose the platforms for protection against the elements and to reduce the heat loss in the winter. That is quite a problem where bulk is handled.

In establishing the internal traffic system free access to stairways should be provided and roads or walks should be provided to take care of foot traffic. Runways from roads and walks for medium elevations are preferable to short flights of stairs.

In laying out a plant provision for automobile parking space should not be overlooked. It is difficult to estimate space requirements per employee for this purpose as it varies according to locality of the plant. For instance, in a plant between Bridgeport and New Haven on a bus line, 250 men are employed and the average parking is 140 cars. On the other hand in the city of New Haven, on a car line, the average parking is 22 cars for a plant employing 100 men.

The location of outside cranes, hoists, gantry cranes, etc., is also dictated by the necessity of the individual plant. The fundamental point to be remembered is that it costs money to lift material or to carry it any distance. Therefore it is economical to keep the lifting and carrying at a minimum.

Conclusion. In plant layout there are few, if any, detailed rules that can be fixed. There are, however, a few fundamentals or general rules that can be enumerated, as set forth in this chapter.

The important thing is to keep in mind constantly the peculiarities of the products to be produced, the type of manufacture that is to be used for such a product and the fact that a straight line is the shortest distance between two points.

CHAPTER V

MACHINERY AND EQUIPMENT

BY W. S. POWERS, *Field Staff Director, Miller, Franklin and Company, Inc.*

In selecting the machinery and equipment for a plant, as in designing the layout, it is essential if the best possible results are to be achieved to determine definitely and accurately at the outset just what plan of production is to be used: whether mass, job mass or job production. This involves, first, an analysis of the products into their component parts; second, a study of the present market and the probable future trends in styles and consumer preferences and, third, a determination as to whether advances in engineering are likely to change radically the product or its method of manufacture.

If the product is one that can be sold indefinitely in quantity, and if little or no change due to style changes or improvements in design is to be expected, mass production is indicated. If considerable runs can be counted on between changes modified mass production will be the plan to use. If only a single piece or a very few of each kind will be made at a time, job production only can be used.

Single-Purpose vs. Standard Machines. A few years ago the general practice was to use single-purpose machines wherever possible because of the fact that on long runs they were as a rule more efficient than multipurpose machines. Today there is a strong tendency away from single-purpose machines and toward standard machines. There are two reasons for this. One is that a highly specialized single-purpose machine is likely to become useless if radical changes are made in the product. Another is that machine builders have succeeded in building standard machines of such wide range and adaptability that they can by adjustment be applied to many special uses and perform with a high degree of efficiency—often they are as efficient producers as the single-purpose machines.

Machine tools as used in metal working are an example. In the old days a milling machine was a milling machine, a drill press was a drill press, and that was all they were. Today a standard milling machine is available which can be adjusted to mill several surfaces at one time, and multiple drill presses can be secured which may be set to drill several holes at various points and angles. When the product is changed permanently or when under job mass production a run is started on a different product such machines are quickly adjustable. In other words, fifteen or so years ago it was necessary to design a special single-purpose machine to perform operations that today can be done equally well on a standard, multipurpose machine.

This is true not only of the highly refined automotive industry but of all of the multitudinous branches of metal working, woodworking, and fabrication of various plastic substances.

In textile and clothing manufacture there are few single-purpose machines. A loom can be changed over easily from one cloth construction to another. While of course there are special machines for cutting, sewing, buttonholing, blind stitching, and the like, they are not single-purpose machines because they can be used for their particular operations regardless of the design of the clothing that is being produced.

In the many different branches of the chemical industry we find both special single-purpose equipment and standard equipment. In highly complicated processes special equipment, unfitted to any other product, must sometimes be used. This often results in a whole series of machines or even a whole plant becoming obsolete due to the discovery of a much more economical way of turning out the product. In other cases, the machinery is quite standard and can be adapted for use with a wide variety of products. A case in point is mixing machines which can often be used for mixing many different chemical products.

High Overhead on Single-purpose Machines. Even in mass production on a well established probably permanent product it is not always desirable to use a special single-purpose machine. Such a machine is often very expensive, entailing a high overhead rate for interest, taxes, obsolescence, and so on. Even though its use might result in great economies in labor when the machine is active, this saving could conceivably be eaten up in uncontrollable overhead expense if sales fell off enough to prevent full use. In other words, when production declines, workers can be laid off temporarily and their wages saved, but a machine cannot be laid off and a large part of its overhead expense goes merrily on whether it is at work or not. This is true whether we are thinking of business depressions or merely the peaks and valleys of seasonal production. The bill for wages is flexible; a considerable part of the bill for overhead on a machine is extremely inflexible.

This balance between the saving in wages and the continuing overhead expense is one that should be given consideration before deciding to spend a large sum on special machinery.

Permanence of Design of Product. The possibility of changes in design of the product must also be considered when deciding between special and standard equipment. This came out strikingly in a metal-working plant making a part which is purchased by most of the larger automobile manufacturers. Little change had been made in the product for a long while, yet there was no assurance that there would never be a change.

This part required, when made on standard machines, the time of twelve men. Investigation disclosed that a special machine that would cost around \$30,000 could be developed to turn out the same volume of production with only two men. That of course would have been a very attractive saving in wages. But that machine would have been so special that it could not be adjusted or changed to meet the requirements of even a minor change in the design of the product. If a customer demanded a slight change in dimensions of the part the entire machine would become obsolete instantly and without

warning and would have no value except as junk. Under the circumstances it was decided to pass up the saving that the special machine would have made and not run the risk of investing \$30,000 in something that might become valueless overnight.

Adopting the Latest Improvements. A very great temptation exists for the progressive production man to keep in the front of the procession by adopting the latest improvements in equipment, whether productive or non-productive, which can be proved to have cost cutting possibilities. That is an admirable frame of mind but it may turn out to be expensive. It has been well said that the sound plan is to be neither the first nor the last to adopt new inventions.

In the past few years there have been very rapid advances in the efficiency of machines. A new tool would be developed which would show an indisputable cost reduction of, for instance, 10 per cent. A fair-sized investment would be made by a manufacturer in these new tools. Then in a few months or a year this tool might be still further improved so as to increase production or decrease costs another 20 per cent. The management would decide that this saving was too attractive to pass, and would forthwith sell the older machines for what they would bring and reequip with the latest improvement. In some cases these recurring improvements happened a half dozen or so times, at an expense for obsolescence that far exceeded the operating savings realized. In one instance, within a very few years a loss of several hundred thousand dollars was built up in just that way. It was charged to obsolescence but it should have been charged to an account called "ultraprogressiveness."

It is quite the rule that when one more or less revolutionary improvement is made in a machine, others are nearly certain to follow quickly. Of course, to drag along too far behind the procession of progress may be fatal in that it may raise costs sufficiently to make it impossible to compete in the open market. To know just when to adopt cost cutting improvements calls for good judgment and it pays to study these possibilities before rushing to displace the old equipment with the new.

Basic Factors in Choosing Equipment. In considering the type of machines and tools to be used, quite competent factory executives are prone to consider only the more obvious high spots of the problem and overlook the more obscure but often decisive factors. This is true both in considering the relative desirability of special-purpose machines and standard machines, in deciding between a comparatively inexpensive machine and a better one at a higher price, and even in determining whether to use a machine at all.

It comes finally to a debate between the *desirability of using labor or machines*. To read much of the literature on industry currently written by laymen whose knowledge is likely to be far more theoretical than practical one would infer that American industrialists invariably displace a man with a machine whenever the chance exists. Admittedly there has developed a sort of religion in which the machine is God, and many factory executives are converts to the cult, but it is not the practice of leaders who test everything they do with the question: Does this render value received?

Let us view some of the considerations that bear on the use of labor as against the use of a machine. There is the flexibility already mentioned, of

labor compared with the inflexibility of the machine. This applies to all machine work as against hand work. The laborer can be transferred to other departments, the machine cannot. Again the production of most machines is set. There is not much chance to increase materially the production of a well-designed machine by the adoption of better methods, while the production of a worker using tools or simple machines is often subject to great increase. The validity of such a consideration would of course depend upon the relative production under the two plans. If there were a great initial advantage with the machine, the machine would probably be preferable if the investment were not too great, for the handicap at the start would probably be too great for the hand work to overcome through any likely increase in efficiency.

In weighing the desirability of man work as against machine work the cost of training is important. It generally costs much more to train a man to do hand work than to teach him to operate a machine. If men are laid off either on account of a protracted depression or to meet seasonal declines it may not be possible to get those same men back when business picks up and it may be necessary to train a new lot. Much of the value of the machine lies in the fact that to a large degree the skill of men has been transferred to the machine.

The relation that exists between the management and labor also has a bearing on the problem of whether to use more machines and fewer workers or *vice versa*. If there are no labor troubles it may be desirable for other reasons to use men instead of machines. But if the relationship is strained, it is often desirable to be as independent as possible of labor and so to rely to the utmost on machines, even though other considerations might point to the desirability of the other plan.

In starting to make a new product it is especially essential to *weigh carefully the efficiency of production against the cost of the equipment*—which is subject to obsolescence. When efficiency and all other considerations are equal it is always desirable to make the product with the cheapest tools possible.

Therefore it pays to examine the product in order to find out whether by slightly changing its design it may not be possible to make it on some less expensive machine. Even though the original design may meet with complete consumer acceptance it is often found possible to make changes which will not affect the acceptability while making it possible to produce at a lower cost.

It practically never is safe to start off with highly refined machinery and tools for making a new product. Let the tool design go along with or even follow the design of the product as affected by the lessons learned in marketing it. Thus even though a new product may be one that can ultimately be made safely by pure mass methods, it usually pays to make it at first with standard equipment for job mass production, or even in some cases by straight job methods, even to the extent of having proportionately more hand work than machine work.

It is necessary to be cautious in making heavy expenditures for machines, tools, and other equipment, and when improvements are finally decided upon, to make them little by little, rather than by sweeping changes. In that way the original job methods of production will be retained for a while although

when possible economies in those methods are discovered they will be adopted. These tentative economies may be the most potent factor in pointing the way to the methods which will ultimately be used when mass production is finally installed in all completeness.

What should be the attitude of the management in regard to *keeping in touch with developments in productive machinery* and other equipment? Does it pay to spend money and time looking around for improvements which might possibly arise, and would, if adopted, result in lower costs? Or is it better to sit tight and let the equipment manufacturers force their new machines upon the factory management?

To some extent this depends upon the capabilities of the production executives. If a plant is well equipped at the start it never seems to benefit from going out of the way to keep up with all the latest developments. On the other hand most of the savings originate within the plant. The production men are better acquainted with their particular processes than any equipment manufacturer can be.

The best results seem to come when the production men keep up a constant study of their own problems and, upon seeing a place where betterments can be made, go to some machine maker with their specific problem and lay before him their suggestions. The place to start betterments is where the machines are to be used.

This plan is not only effective, it is one of the most certain safeguards against making premature changes in machinery which may end in extravagant charges for obsolescence.

In arriving at a final decision as to the extent to which machines shall be used—and this includes the use of special machines as against standard machines of less productivity—it is a matter of dollars and cents evaluation of the various factors for and against both plans. *Only by taking into consideration every element which will have an effect on final profits can the best possible decision be reached.* Some of the factors are definitely known. Others such as the chances of change in design of the product or improvement in the machine involve a study of the probabilities. While they are not definitely ascertainable they can usually be determined within a reasonable degree of probability. When there is doubt it is better to be conservative and avoid risking great amounts of capital on a long chance.

Determining Number of Machines. The factors which determine the actual number of machines to be used are as follows:

1. The number of shifts to be worked.
2. The desirability of operating certain machines at more than their rated capacity.

Far too often the size of the plant and with it the number of machines to be installed at the outset is determined more by preconceived beliefs and traditions than as a result of scientific analysis and a careful balancing of all the economic facts involved. There is no doubt that most branches of American industry are suffering from considerable potential overproduction. This is due to a number of reasons, among them too many factories, too much

obsolete machinery which cannot be operated efficiently at any time and at a profit only in the rare times when production temporarily falls behind demand and prices are therefore high.

Problem of Number of Shifts. Of equal importance with any of these—although not so often mentioned—is the fact that too many factories are equipped with machinery to take care of normal or in some cases peak production with one shift operation.

It is perfectly evident from an accounting and economic viewpoint that it is desirable to keep equipment busy to the greatest extent possible. Much of the overhead expense caused by investment in machines goes on twenty-four hours a day every day in the year whether or not the machinery is turning out goods or lying idle. From a theoretical economic standpoint, therefore, it would be sensible to operate a plant two or three shifts. For a given production it is evident that to produce a given amount of goods only one-third as many productive machines would be necessary on three-shift twenty-four-a-day operation as if the plant operated only one eight-hour shift. If two shifts are operated the production could be obtained with half the machines which would be needed on a one-shift basis.

But there is more to this subject than economic theory.

It may be that the normal production for nine months of the year can be turned out with two shifts, but that in the busy season it is necessary to operate three shifts to keep up with sales. In many industries it is essential to have excess capacity to care for these seasonal peak loads.

If the business is such that inventories can be piled up in slack times and drawn upon in the busy season, it is possible to determine a plant size which can be operated at full three-shift capacity the year round. Such a plan, however, is not always practicable, due to perishability of the product, the danger of sudden style changes or financial incapacity to tie up the necessary capital in excessive off-season stocks.

Then, too, in many industries there is the difficulty of getting sufficiently skilled workers who are willing to work nights. This is perhaps especially true of the supervisory help. There is also often some difficulty in tying together the activities of the day and the night shifts. Night shifts usually produce at higher cost than day shifts for these various reasons although the average cost of both will be less than that of the day shift alone.

Nevertheless, in deciding upon how much machinery to install at the start it is important to make a complete study of the possibility of operating two or three shifts in order to get the largest production for the smallest investment in machines and equipment. Here again it is necessary to weigh a number of items carefully in order to get the best balance.

Probability of Obsolescence. In some cases the question of probable obsolescence of the machinery for any reason has an interesting bearing on the number of machines to be purchased.

Most machines are rated by the maker for a certain production. Yet frequently it is possible to increase that production as much as 50 per cent by driving the machine over its rated capacity. This will usually result in the machine wearing itself out in much less than its ordinary life. That may, however, be worthwhile if there is a reasonable danger that, through

change in the product or improvements in the machine itself, it is likely to become obsolete before it would wear out normally.

Let us suppose that to get the required production on a certain operation would require twelve machines operating at their rated capacity. It might further be assumed that the life of the machines at rated capacity is ten years, but that if operated at 50 per cent overload it is estimated that the machines would wear out in five years.

Now let us suppose that there is reason to believe either that the product or the machine would be changed to such an extent in about five years as to make the replacement of the machine desirable. It is evident that under such a combination of circumstances the sensible thing is to operate the machines at 50 per cent overload so that the machines would wear out at about the time they would become obsolescent anyway. Operating at 50 per cent overload it is evident that the needed production would be secured with eight machines rather than twelve. That, considering the high price of most productive machinery, is a worthwhile saving in investment.

Of course there may be complicating factors. Few problems are so easily solved as that. It might be that such a heavy overload as 50 per cent would result in excessive maintenance and repair charges against the machines. In most cases, a degree of overload can be determined which will give the lowest unit costs for the product, all things considered.

Choice of Material-handling Equipment. With such so-called "non-productive" equipment as that used in handling materials, there are usually a number of types among which a choice can be made. There is always a best way to do a thing but that best way is not usually so apparent on the surface as to be evident upon cursory survey.

Much overinvestment in such equipment and high-cost operation is due to what amounts to an obsession on the part of some engineer or production man. A hat manufacturer, who was proud of the progressiveness and open-mindedness of his plant superintendent, had in fact made quite a number of improvements in equipment and methods which resulted in lower costs. When the superintendent suggested connecting two adjoining buildings with a conveyor for handling a certain semifinished material the manufacturer assumed that he had studied the problem and knew what he was doing. After some \$3,000 had been invested in the conveyor it was pointed out by an outside engineer that the conveyor required the services of two men, one to load the conveyor and the other to unload it. All of the material had previously been handled between the two buildings by one dinky with a hand truck.

That is neither a condemnation of conveyors in general nor a blanket endorsement of hand trucks; it is merely a ridiculous example to show that the choice of equipment calls for common sense.

Even when one type or another of equipment for moving materials seems on the surface to be indicated, there may be deep-lying reasons for adopting some other type. Thus in one plant a study of the physical conditions showed that a conveyor costing \$12,000 could with the help of two men do the material moving which was taking four men and two motor trucks. On the face of it that was an investment that would pay well. But the lease on the

plant had only five years to run. At the end of that time a new location would have to be found and the odds were great that the conveyor would not fit the new plant. That meant that the entire investment would have to be written off in five years—at the rate of \$2,400 a year. All elements of cost considered, the expense would more than offset the saving that could be effected, so the conveyor was not purchased.

Reduce Handling of Materials to Minimum. When attacking the problem of material handling, the best possible approach is that which assumes at the outset that material handling is at best a more or less necessary evil, a process that is wholly non-productive in that it absorbs time and money that under ideal conditions would be spent on productive processing or fabrication. The less materials have to be moved the better for costs and for speed of production.

This approach will tend to eliminate expensive investments in trucks, conveyors, elevators, and other types of carriers. In fact when the problem of devising better ways to handle materials comes up in an existing plant the best starting point usually is the study of the existing plant layout in the light of the principles outlined in Chapter IV to see whether by rearranging the layout much of the material handling cannot be eliminated. There are cases where by this means the length and nature of the hauls have been so decreased as to permit all necessary handling of material to be accomplished with 75 per cent less equipment than would have been required with the old plant layout.

This is accomplished in two principal ways: *by placing departments in more logical relationship to each other which reduces the interdepartment moving, and by improved arrangement and spacing of machines within a department.* Often in a functionalized department it is possible to use the "pass-along" system by which each worker when he has finished his operation passes the piece to the man at his very elbow, who is to perform the next operation. Although this cannot always be achieved, it is a goal for the engineer to keep in mind if he would keep the investment in material handling equipment at the irreducible minimum.

Material-handling problems can be generally grouped according to the following classes:

1. The handling of materials in bulk, such as coal, sand, cement and the like.
2. Movement between departments when the sequence is always the same.
3. Movement between departments when the sequence varies.
4. Movement through an assembly department.
5. Movement within a department.

A great many varieties of devices have been developed to handle these different problems. Among the more commonly used are: belt conveyors, gravity conveyors, roller gravity conveyors, monorail conveyors, wood apron conveyors, slat conveyors, travelling and locomotive cranes, barrel conveyors, pneumatic pipe lines for dry, granular materials, pump pipe lines for liquid materials, package elevators, monorail hoists, lifting magnets, tiering machines, tote boxes, tractor trucks, hand trucks—two-, three- or four-wheel

lift or non-lift—industrial railroads, trailers, power lift trucks, monorail trolleys, truck platforms, and assembly conveyors.

It is to be remembered that the object is not merely to transport materials from one place to another. The aim should be rather to move them as short distances as possible, as quickly as possible, in exactly the right quantities, and in such a way as to impede the efforts of the productive workers as little as possible—all of this at the lowest possible cost. It should perhaps be emphasized again at this point that the relative costs and savings should be accurately balanced. In other words it is possible but not sensible to spend more money on refinements in material handling to achieve theoretical perfection than will be saved in productive effort.

Moving Materials between Operations. A few years ago it was not unusual for a worker at a machine to put the piece on which he had just completed his operation, beside him on the floor. When a sufficient quantity of these pieces had accumulated a hand truck would come along and the trucker would laboriously pick up the work piece by piece from the floor, place them on his truck, and haul the load to the next department where he would put the parts on the floor alongside another machine. The machine operator then had to bend down for each piece as needed and when finished replace it on the floor, and the entire laborious time- and money-consuming proceeding would be repeated many times before the part was completed.

Today it is rare to see such an inefficient method in use. Where it is necessary to use either hand trucks or power trucks, the most usual plan is to use the lift type. The materials if small and light are kept in tote boxes which rest on skids or platforms. If possible these are at a height which demands as little reaching and bending by the productive operator as possible, and no direct handling by the trucker. The truck is merely run under the platform, raised and the load whisked away. Instead of tote boxes it is often desirable to have specially designed platforms equipped with racks for the protection or easier handling of the parts.

Moving materials between operations in this way has an advantage in some cases over moving them by conveyor, in that just the right number of parts arrive at the operator's machine at the right time, with no danger of dumping too much on him and perhaps causing a congestion in the department. If the operation is a simple one which can be completed in a few seconds, a properly designed conveyor may be a real aid in speeding his output. If he takes unfinished parts from a truck and puts finished ones back, the productive operator must necessarily give some of his attention to that non-productive performance. A well-designed conveyor will, however, deliver the part to him at just the right place every time so that he can reach for a new part or return the finished one without a glance at the conveyor or a thought about the action. This results in a considerable speeding up of production—as much as 20 per cent at times, frequently 5 to 10 per cent.

In some instances it is desirable to give thought to designing what might be called a "closed circuit" conveyor, on which the part remains until the operator is ready to remove it. This in effect builds a goods-in-process reservoir right on the conveyor. The plan has wide application in a number of different industries.

Conveyors for Assembly Work. The use of conveyors on assembly work depends largely upon the size and complication of the product and on the amount of material required in making the assembly. The moving assembly line is of use chiefly when the assembly is so large that once on the conveyor it is left there. With such a product the assembly moves progressively to the various assembly points and the parts applied at those points. This may be done either by having operators at each station adding the part to the assembly, or by having assemblers move with the assembly and pick up the parts as he and the assembly pass along the line. When the production is very large it usually pays to have the work come to the man. Each man by doing the same job repeatedly becomes highly proficient.

If the assembly is small enough and light enough to be easily handled, it is usually preferable to have each assembler lift the piece from the conveyor and work on it on a bench with a suitable fixture, rather than to have him do his assembly work while the assembly is moving on a conveyor.

If progressive assembly is being done on light parts and if most of it is bench work it is usually desirable to pass the work from bench to bench by hand thus doing away with all mechanical handling devices.

It is well to remember that in assembly work the purpose of using a conveyor is to split the operations to get proficiency on the part of the workman and to make the material accessible by scattering it.

The equipment required in the *tool and maintenance departments* depends on the type of product being manufactured. Usually the work requires a considerable degree of accuracy, so that until recently the machine tools tended to be lighter than those used in regular production. As plants became larger there was more work for the tool and maintenance departments and tools were developed which gave greater production without loss of accuracy. This results in greater economy in the production of tools provided there is enough of the kind of work to keep the machine tools busy.

Most of the industrial states now have laws providing minimum requirements in regard to *safety appliances*. It is generally wise to install any proved devices which tend to reduce the possibility of accidents, not merely for humanitarian purposes, but for dollars and cents economy. It is usually less expensive to spend money for safety devices than to pay for accidents, and when a worker knows that he is working on a machine on which it is practically impossible for him to be hurt, his production tends to increase automatically.

Power Lines. It is usually advisable when building a new plant to provide facilities for electric power, steam, gas, water and air as part of the building itself since that is cheaper than to install lines after the building is erected. Therefore in the original design it is well to provide outlets at frequent intervals so that they may be tapped without installing secondary lines.

It is common practice to differentiate the various pipes and conduits by a code of colors to simplify their identification.

While in most well-designed factories there is little need to provide for mobility of the productive equipment, there are certain types of factory in which this is desirable. In that event it may be well to have a comprehensive network of power mains all over the plant with plug-in receptacles at close

intervals. One large book bindery which has many jobs running into the millions of volumes finds that it is often desirable to rearrange its equipment in order to take care of these large jobs according to mass production methods. It has its equipment mounted on casters so that it can be readily moved. Each machine has its own individual motor drive and is equipped with a length of power cable and a plug. The power mains are overhead and have outlets at such close intervals that no matter where in the plant a machine may be placed it is within plugging distance of the power.

It is, however, rare that such extreme mobility and flexibility are required. For the ordinary plant such provisions would doubtless cost more than they would be worth.

The nature of the production determines whether group or individual drive is best. If a group of machines is of such a nature that when one of the machines is in use the other machines in the group are likely to be also, the group drive is cheaper. If, however, it may frequently be necessary to operate one machine but not the others the unit drive will be cheaper.

If steam is necessary for other purposes than heating the buildings in cold weather, the layout of steam lines and the method of generating the steam are worthy of careful consideration. If the plant has its own power plant it is usually best for economy in generation to generate all steam for whatever purpose in the central boiler room. When a small amount of process steam is needed at a point far remote from the boiler room, it would probably be less expensive to put a small boiler close to the point where that steam will be used than to run a long pipe line to the point from the central point.

The same considerations are involved if power is purchased. If a large amount of steam is required at a few points reasonably close together the central boiler is usually cheapest in the long run, but if only a comparatively small amount is needed at widely separated points it is usually cheaper to have smaller heaters right at the point where the steam will be used.

Communication methods for factories have been highly developed. In small factories it is generally satisfactory to secure interplant connections through the private branch telephone exchange which is connected with the outside through the company switchboard. If the plant is fairly large or if there is a tendency for employees to use the outside wires excessively for private calls, it usually pays to have a plant switchboard in addition to that giving connections with the outside.

In a plant having more than 20,000 square feet of floor area it will pay to have some modern type of call system.

In some factories it is also desirable to have some system by which written messages may be transmitted. For this purpose the telautograph or even the electric typewriter may be desirable. If, however, the actual original message in the form of a memorandum or a filled-in form must be delivered it is well to consider carefully the advantages and disadvantages of messengers, basket conveyors, and pneumatic tubes. The pneumatic tube system is chiefly in use where a great many papers must travel between certain definite points and where great speed is essential.

The various types of *time recorders* range from hand stamps to centrally controlled electric stamps. The electric type is of value in large plants where several time-recording stations are required, in that they are more accurate and more easily maintained. In a small plant the hand stamp or the use of the clock and the written time is usually sufficient and more economical.

For in-and-out time recording the electric stamp is universally used. In-and-out clocks may be all concentrated at the entrance to the plant or scattered throughout the plant in the various departments in which the operators work. Concentration at one point allows of closer supervision of the men during the time they are entering and leaving the plant. Locating the clocks in the department has the advantage of showing the time at which the men arrive at their departments rather than at the gate of the plant and also does away with the congestion which is liable to develop at the central point.

In many plants that locate clocks at the gate the men are required to enter the plant at a certain specified time before the work starts in order to insure that they may be at their departments.

It is possible in the small plant to combine the use of the departmental clock which is used to designate the time taken on the various jobs with the in-and-out function of an in-and-out clock.

Dies, Jigs, and Patterns. Since dies, jigs, and patterns usually are expensive, precautions should be taken to insure that none are made up unless they are necessary. The relative advantages of various types of dies of different original cost should be weighed against the possible saving, special consideration being given to the number of parts which are to be made. There is also the question of using jigs and fixtures at all. Here again it is a matter of balancing the cost of the tool against labor cost. Not to use a jig may cost more in labor than the jig would cost, and *vice versa*. On many operations a jig or die may be absolutely essential for accuracy. Then it is essential to consider the cost of the minimum jig to do the work against the saving in labor that might occur with a more expensive one. The balance involves an analysis of the cost of the job per piece and the cost of the labor which will be required to do the work. It is not one for which a simple formula can be set.

How long to keep special dies, jigs, and fixtures depends on the industry. With some products a customer expects to be served with replacement parts for an indefinite period. In others there is no expectation of replacement. In the first case dies, jigs, and fixtures should be kept as long as there is any chance that replacements may be demanded. In the other case they can be thrown away as soon as the job is done. If a product can be expected to last a long time in the hands of a consumer and there is a chance that a few replacements may be needed over a period of years it may be cheaper to throw the die or fixtures away and make the part by hand if the need arises. Here again a careful balance should be struck taking into consideration all factors.

Thus in every phase of equipment selection the important thing, regardless of the type of equipment, is to set up the pros and cons from a cost point of view, and decide in favor of that style, type, and amount of equipment

which will, all things considered, give the *lowest total cost*—that is, *with equal quality of product*.

This is not always so easy as it may appear. It involves intelligent analysis of the product and proper weighing of all factors of initial investment, as well as all factors of labor, material and overhead costs. The test is always, Will this render the greatest possible value for my money in the long run?

CHAPTER VI

RESEARCH, DEVELOPMENT AND DESIGN

By R. G. CASWELL, *Director Department of Industrial Research, Bigelow, Kent, Willard & Co., Inc.*

When it first became known that one of our supercorporations was operating its research department on a budget of \$20,000,000 per annum, with a personnel of some 4,600 charged to research, the news value of that announcement was comparable with that of the dog-bitten-by-man incident. For a time it was felt that the trend was to regard research as the vital factor of industrial progress, which is a gross overstatement of its value.

Research Must Be Correlated with Marketing. A truer picture of the place of research in industry is given by regarding it as only one of several vital constituent factors. Recognition of the real value of research to manufacturing lies in the correlation of this factor of industrial progress with that equally important phase, marketing. Whatever academic interest obtains to this day in respect to the relative priority of the hen and the egg furnishes no parallel in marketing and industrial research. The former, we are convinced, has precedence over the latter. It is recognized that there are instances of a business, or even an industry, that has been founded on a discovery; but in general it is the market survey which first estimates what can be sold, how many can be sold, and to whom and how distributed. These questions of market must, in general, be answered with a reasonable tolerance for inaccuracy before any extensive program of research and process development is undertaken. When this order of development is violated, the stage is set for throwing the whole project out of balance, with the result that the manufacturing organization is likely to find itself possessed of a product, for which it has made a considerable investment in time and capital, and for the marketing of which comprehensive knowledge is lacking. In this situation, the expectancy of profitability from the research is low. Considerations of this character based on experience and observation lead us to the conclusion that one of the primary factors of the organization of a technical department should be the highest obtainable degree of cooperation and correlation with the work of the department entrusted with marketing. To this end, a chart of organization of a technical department would read as shown on page 590.

A Research Organization Must Be Developed. Assuming for the moment the position of a technical department in relation to the company as a whole, its organization and functioning to the profitability of the business it is intended to serve, represents a slow and oftentimes painful process of evolution. Save in rare instances it cannot be developed to function effectively in any

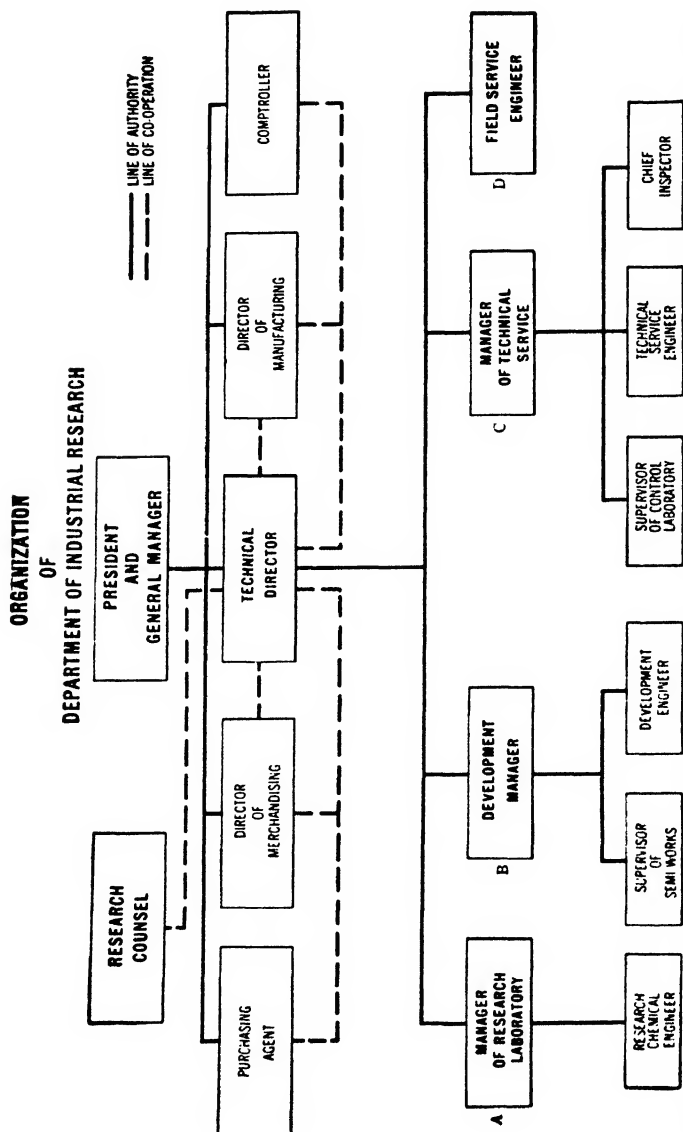


FIG. 1.—Organization of department of industrial research. (Copyright Bigelow, Kent, Willard & Co., Inc., Boston, 1930.)

period measured in weeks or even in months, but must be gradually nurtured with the most painstaking care in the selection of personnel, particularly in the choice of the divisional heads designated as *A*, *B*, *C*, and *D* in the foregoing chart. Obviously, the greatest hazard lies in the selection of the technical director, not only because he is the key man, but also from the fact that the source and authority for choosing him reside with major executives, who in all probability, in the majority of instances, do not possess a technical background.

Wide Variance in Internal Organization. In respect to the internal organization of a technical department, there can be a wide variance in functions dependent upon such factors as the nature of the product and its method of distribution, whether the output be merchandised in bulk or in homogeneous units, or, as is characteristic of by far the major fraction of manufactured articles, as an assembly of many parts. For these reasons no single chart of functions may be drawn to express adequately and without modification to particular needs, all manufacturing. In general, it is felt that an empirical statement of distribution of technical activities is reasonably given by the following breakdown:

	Range, per cent	Average, per cent
A. Research.....	10 to 30	20
B. Development	40 to 50	45
C. Technical service to process.....	20 to 30	25
D. Technical field service and observations.....	5 to 15	10

From this distribution of effort is developed a chart of technical department functions in relation to merchandising and management engineering, which is thought to be self-explanatory.

Outline of Procedure in Specific Case. It is obviously beyond the scope of this article to discuss in detail the application in practice of the many highly diversified cases that are presented to a technical department for solution. These range from a customer complaint for improvement in service of some component part of the product, to a suggestion for modification to anticipate competition and customer demand, and to extend sales by development of a new product. A fairly representative case in point would be to outline the procedure in relation to research, development, and culmination in production, of a request transmitted from the sales department to the technical department to develop a perforated rubber soap container in imitation of veined marble, say Egyptian porphyry. Let us assume that the director of merchandising has first determined probable market for the proposed new article of manufacture, together with the cost of sales and margin between sales cost and sales price, in the absence of which information the technical director would do well to reject the project. Let us further assume that the company has experience in the manufacture of mechanical rubber goods, and that the contemplated bath soap container does not entail divergence either in manufacture or in distribution.

The initial step in the creative process would be assigned to the research division, which would possess satisfactory resistance to light and air aging, would not stain, would manifest a permanent bright surface under service conditions, and would be free from sticking and

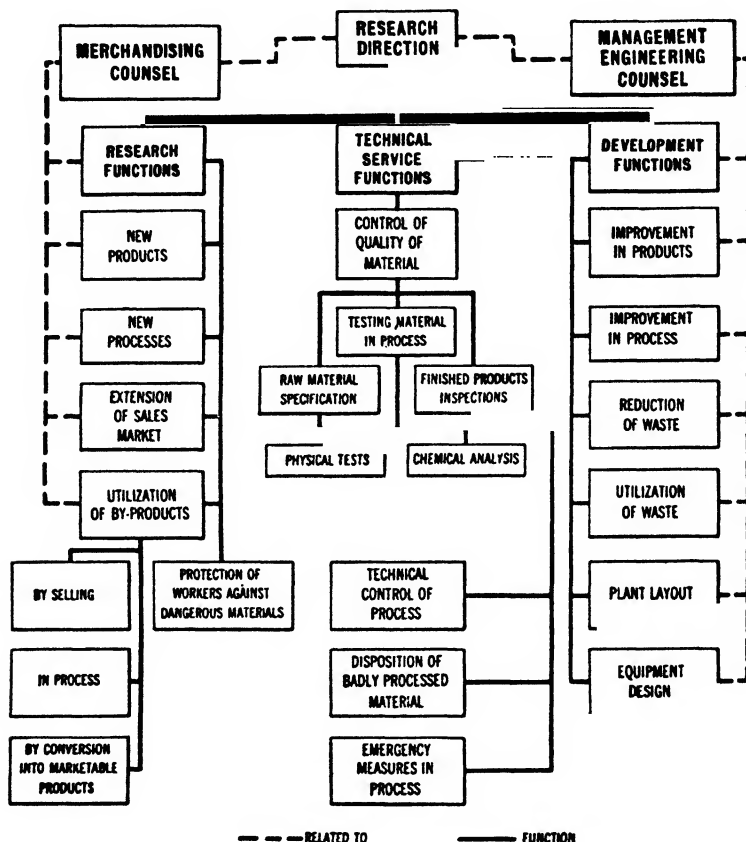


Fig. 2.—Research functions in relation to merchandizing and management engineering. (Copyright Bigelow, Kent, Willard & Co., Inc., Boston, 1930.)

chipping during the hot moulding operation. Formulae to yield the veining effects and shade of color would also be a part of the research. In addition, the division would be expected to submit material costs, estimates of probable losses or rejects, and equipment productivity based on the cycle of vulcanisation. At this stage in the art the development division would

undertake the design of multiple moulds, and eventually standardize the mixing of the raw stock, calendaring to gauge with establishment of tolerances in thickness and shape of slug for the mould; and carry out the operation for producing the finished article on a semiworks scale, until a fair picture of manufacturing specifications and total manufacturing costs was available. Finally, an engineer from the development division would cooperate with the production department until the article was finally accepted as a regular routine manufactured item.

The same procedure obtains when the proposed betterment work relates to the design and development of special tools and equipment. In many organizations work of this character is carried on by an experimental mechanical division of a strictly engineering department. But adequate provision for this type of development exists in a technical department that contains a development unit as given by Fig 1. It is our thought that a single technical organization should embrace all technical activities, including:

1. Research.
2. Development.
3. Technical service to process, commonly designated as control work and "trouble shooting."
4. Technical field service.

We believe also that the differentiation in respect to work should be in terms of the character of the proposed betterment project as outlined above and not in terms of the particular field in which the development lies, as for example the chemical, the chemical engineering, or the mechanical.

Scope of a Technical Department. The objection to the last-named classification as a basis of organization is that, by and large, problems are not clearly separated into these lines of attack, and that operation under these conditions entails considerable overlapping. There is frequently a broad and indeterminate borderland between the chemical and engineering phases of a problem. In this situation it is our thought that a more effective and flexible basis of organization obtains when the physical set-up of the department is formulated upon the conception of the problem as advancing by stages, and that the problem is held to be neither chemical nor mechanical, but one of development. From these considerations it would appear that there are marked advantages in concentrating the direction and control of all technical betterment work in a single technical unit, in virtue of which a problem gradually emerges from the research stage to enter the development stage, and thence to the semiworks trial period, without undergoing any disruptive influences that would otherwise be likely to be encountered by transfer of authority to an outside department. In a technical unit embracing research and with full authority for development, the internal transfer of personnel to meet special needs is readily and effectively accomplished. It is for these reasons that the concentration of all technical functions within a single group is favored.

It is not intended from the foregoing picture of the scope of a technical department to steal power from the engineering department. The latter has a distinctive function in any large manufacturing organization. Problems of equipment maintenance and replacement, the extension of operating and

service units, construction and demolition are some of the activities which are unquestionably applications of the engineering art, and are entirely without the field of product and process betterment.

Importance of Semiworks Study. For the actual carrying out of technical process work, it has been the experience of many manufacturers that there has been a progressive increase in the size and investment in equipment for use in experimental work, and this condition has culminated in the recognition by those manufacturers better organized and equipped for the prosecution of technical activities, of the need for a set-up between the laboratory and plant, and to which the term semiworks has been given. It is true that in many instances the results of the laboratory can be translated directly into plant operation, or when adjustment to factory process and equipment requires a trial period under conditions approximating regular operating conditions, that this development work can be carried on in the plant without serious interruption of production. But it is more likely to be the case that preliminary trial of contemplated change in process or product under factory conditions will indicate the necessity of revamping the equipment, which may conceivably entail major changes. The attendant expense in view of the hazard of failure of the experiment in relation to the volume and value of the material involved in the plant scale trial, calls for rare good judgment and a certain measure of good fortune in this kind of experimental work.

It is an empirical fact that, generally speaking, a semiworks as a place for trial manufacture under conditions entirely apart and distinct from the plant cannot be economically eliminated from a well-rounded technical unit. Instances of the failure to appreciate the necessity for semiworks study as an intermediate stage between laboratory and plant have been numerous within our observation over the past fifteen years. A case in point that occurred during the progress of the first assignment ever tackled by the writer is felt to be fairly representative of the error in not including a semiworks in the technical program. Attempts were made to translate observations made in a 10-gallon kettle to regular operation in a 3,000-gallon tank, in the course of which problems of agitation and rate of heat transfer in relation to chemical action and crystal formation developed obstacles of such proportions that after much waste of time and material it became necessary to reopen the project virtually as a new study. Some years ago, in the course of a discussion on this point with the general manager of one of our largest corporations engaged in the manufacture of acids and heavy chemicals, it was stated in reply to a question by the writer that in respect to the order of difficulty in development, the ratio 1:10:100, represented his experience in the ascending relationship of laboratory to semiworks to plant. Herein is a rough picture of the responsibility and comprehensive scope of a technical unit.

Summary of Functions in Sequence. A description of the coordinated interests of a technical department operating through the laboratory, the semiworks and the manufacturing plant in the bearing of these three constituent functions on the profitability of the technical department to the company, may be summarised in the following three paragraphs:

The Laboratory. Here the bibliography, including patent literature, is first searched for suggestions and data pertinent to the project. This is followed by experimental work to determine the fundamental chemical and engineering properties involved, particularly with respect to limiting variable factors of process and product, and estimated material costs.

The Semiworks. At this stage in the research, the development of process is studied on a semicommercial scale. Here are worked out the problems of handling of solids and liquids; selection and layout of equipment; problems of heat transfer, agitation, and mixing; the combating of corrosive influences; the apportionment of direct and indirect labor, and the probable necessary technical supervision and control. From this experience in the study of process on a semiworks scale, there is obtained reliable data for the design and construction of plant.

The Plant. In this unit is verified the scientific soundness of laboratory study, the practical experience of a period of reduction to practice on a semicommercial scale, so that the culmination of development in the plant insures uninterrupted production at economic manufacturing cost.

Patent Not Always Desirable. The desirability of obtaining patent protection on improvements which constitute invention presents a question that is open to much discussion. In theory, the amount of protection is a straight line function of the degree of disclosure, so that it logically follows that a patent is no stronger than its disclosure. But the nature of the protection afforded the patentee in virtue of his disclosure is limited to the privilege to seek redress at law against an alleged infringement. The possession of a patent, therefore, can in no sense be construed as an equivalent of insurance. The manufacturer, in order to defend his patent merely has the right to recourse to legal action. There are conceivably instances in which infringement has been existent over a fair fraction of the life of the patent and without the patentee's knowledge; or cases in which practice is based fundamentally on a patentee's disclosure, but in which the factor of resemblance to the patent falls just short of that degree of similarity to render the case actionable.

As a fruitful source of suggestions for a research project in its initial stages, the situation is further complicated by the fact that the study of patents is generally held to be of equal importance with that of the general technical bibliography.

Considerations of this character, however, should not be taken to discourage a manufacturer from seeking a limited monopoly for his invention in exchange for disclosure, particularly in view of the fact that he cannot altogether escape from the hazards of disclosure through leakage.

On the contrary, there are numerous cases in which the useful invention is basically new, and these it is generally practicable to cover by letters patent. It is the purpose of this brief review merely to differentiate between those subjects that embody a fundamentally new product or process that is of intrinsic value to the prospective patentee, and those minor improvements in process or product, which are difficult to defend against infringement and for which the expense of securing patent is frequently hard to justify in value received.

Here again a heavy responsibility rests with the technical director. It is obviously his duty to stimulate creative effort in the staff under his control,

and to this end he cannot categorically refuse to the inventor public acknowledgment of his invention in the form of letters patent. Withal, it cannot be controverted that the phraseology of patent specifications, in which the thing or art for which protection is desired, is described as a "useful invention" is, by and large, tremendously flattering. Anything approximating a *laissez faire* policy in this respect would soon lead to a condition, in virtue of which the company might be working primarily in the interest of its patent attorney.

Economic Point of View. Some decade and a half ago, an instructor in McGill University asked of his class of twenty-eight men in chemical engineering, this question: "What is a chemical plant for?"

Twenty-seven of the replies averred that the reason for the existence of a chemical plant ranged from furnishing concrete illustrations of the principles of science, to the advancement in the industrial arts in the interest of society; all of which answers reflected an academic and commendably scientific point of view.

The twenty-eighth reply was the sole expression of the cogently imperative economic viewpoint, expressed in Coolidgean terseness, "To pay a dividend."

To this end, and to this end only, the plant operates in the interest of the workers and capital employed, and the public that is served by its output. The continuance of profitability is the "be-all and the end-all" of its existence. The technical or betterment department as a factor of maintaining and improving the position of the company in relation to profitability must have an identical point of view. This conception of the broad function of the technical department in no sense entails a perversion and degradation of the scientific approach and attitude. On the contrary, it merely sets the stage for concentration on those problems from which the expectancy of adequate return is high.

The questionnaire by which the ancient Greeks tested all new propositions may be recalled in this connection:

1. Is it true?
2. Why is it true?
3. What of it?

Academic research, which has its roots in speculative philosophy, is logically interested to submit an answer to all three propositions, in the order of their presentation. Industrial research, on the other hand, must concentrate on propositions one and three, and during the period that it is struggling to determine the truth or falsity of a hypothesis it must visualise its value in application by replying to the vitally economic test question, "What of it?"

Research Appropriation Based on Gross Sales. From these considerations, it remains to determine what economic factor shall be selected for measurement of the size of the appropriation for the work of the technical department. As a general principle, we have laid down gross sales as a reasonable basis for expenditure to this end, and have taken 1 per cent as a minimum empirical ratio of industrial research to gross sales. In Fig. 3 we have plotted expenditure for technical work against gross sales over a range of \$500,000 to \$10,000,000 per annum. Obviously, this percentage will be likely to

exceed 1 per cent as the gross sales are progressively less than \$10,000,000 per annum. Ratios as expressed by this chart are empirical and cannot be held to have justification other than such as has been derived from observation and experience.

Average Costs per Man per Annum. In general, it has been found that total cost per man per annum, including staff, supplies, equipment, and

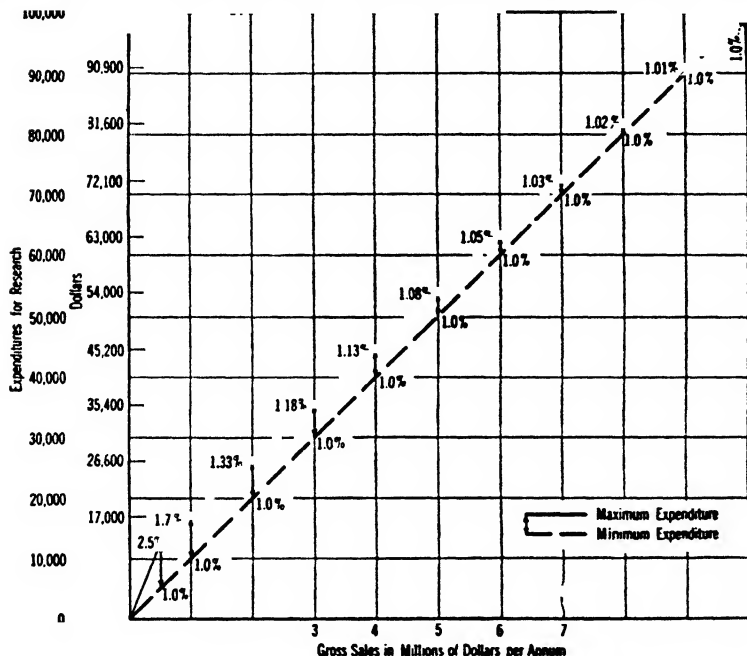


FIG. 3.—Expenditure for research vs. gross sales. (Copyright Bigelow, Kent, Willard & Co., Inc., Boston, 1930.)

general expense, approximates \$4,000, although wide variations in this respect have been noted. An instance in point is furnished by a technical department operating under five subdivisions, in which the divisional costs per man per annum varied from \$3,000 to \$4,600. Apart and distinct from variations in cost per man per annum within the groupings of a single department, there will exist a wide range in the average costs per man per annum among the technical organizations of different companies. These variations follow in part from wide differences in the nature of the development work, in the cost of equipment and supplies, and in the experience of the personnel required. But, in general, it would be anticipated that in a company having annual gross sales of \$5,000,000, from \$50,000 to \$54,000 would be expended for the technical department, including a staff of twelve to fourteen men.

Control of Expense of Research. One of the most perplexing and troublesome problems that has confronted administrative officers in the management of their technical departments has been the disposition of the research budget and control of expense in relation to accomplishment. It is our thought that the organization of a technical department, not only from a physical, but also from a cost standpoint, approximates in importance the emphasis that attaches to the actual prosecution of technical work. For where recognition is not given to distribution of effort and its attendant expense in the bearing of these factors on profitability, the department is likely to be out of balance, with consequent over-running of appropriations, through the carrying out of work from which adequate return is not forthcoming.

Accounting Difficulties. In so far as we have been able to ascertain, no comprehensive or even adequate system of accounts for the crediting of the achievements of a technical organization has ever been worked out. The development of such a system to embrace all technical activities is a thing of the future and current procedures must be regarded as formative and tentative. This condition follows from the fact that the results expected from technical work are only in part tangible, and capable of being evaluated as a definite credit against the expense of research. From this conception of the functions of industrial research, the following subdivision of activities affords a basis for a partial reduction of expense to a method of accounting:

A. Tangible.

1. Process savings.
2. Reduction in material costs.
3. Reduction of waste.
4. Disposal of waste and by-product material.
 - a. In process.
 - b. By conversion into marketable products.
5. Sale of patents or royalties from same, or manufacture.

B. Intangible.

1. Solving of process troubles to insure uninterrupted production.
2. Development of control tests to safeguard present quality.
3. Maintenance of technical control.
 - a. Raw materials.
 - b. Materials and products in process.
 - c. Finished products.
4. Improvement in quality, appearance, and versatility of product in service.
5. Extension of sales through new products, to anticipate competition and to meet present customer demand.

It is felt to be safe to assume that the so-called intangibles outweigh in importance the tangibles, from which condition the way is not clear to set up a technical department on a 100 per cent accounting basis, but only to the extent of definite savings classified as tangibles. The balance of research expense is charged off to product and market betterment.

This type of apportionment of technical department expense follows from a conception of the scope and function of technical work that has no theoretical basis, but has its origin solely within our observation and experience. It is our thought that marketing and industrial research are highly interdependent

factors of industrial progress, from which conception it is held that a technical department should not be forced to justify itself entirely in terms of definite economies accruing from its work; and for which reason a definite percentage of gross sales, say a minimum of 1 per cent, should be appropriated annually for the promotion of product and market betterment.

Incidentally, experience has shown that in not a few cases in which the technical department has been properly organized and its program efficiently carried out, the expense of the department is in large measure balanced against the savings obtained from the so-called tangibles, leaving only a small residue to be charged off to product and market betterment.

Method of Evaluating Accomplishment. The problem, then, is how best to evaluate accomplishment, particularly in respect to the intangible group of technical department functions in relation to expenditure; and how best to set up and control expense. For this purpose the establishment of all technical department activities under a docket, with the respective jobs under the docket designated as projects, furnishes the groundwork for a simple, workable and consistent scheme for research control.

A skeleton form for projects is given below:

Title of Corporation			
Technical Department			
Project No. _____	Date approved _____		
	Date work started _____		
	Assigned to division _____		
Object _____			

Prior art _____			

Estimated cost (monthly, when final cost for completion cannot be estimated)			
Estimated date completed (wherever possible)			
Estimated economies (if in the tangible group—annual basis)			
Status of project:			
Month, 1930	Per cent completed	Expenditure	Progress to date
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
If discontinued or in abeyance: Reason _____			
(Date) _____			

The formulation of the projects under the docket is the duty of the technical director in collaboration with the directors in charge of manufacturing and of merchandising, and the comptroller. In addition to its major purpose in evaluating the cost of technical work, the docket system furnishes the means for determining a capacity load for the department, and for the fixing of responsibility, in the event of a change in, or discontinuance of, any of the items of the docket.

Use of Monthly Time Sheet. For the determination of monthly costs, the basis is a monthly time sheet supplied to all members of the technical department, including the director. The function of this time sheet is not to serve as a check on the amount of time spent on the company's premises, so that it is in no sense an attempt to create a palatable substitute for a time clock. To the technical staff this time sheet presents an incentive to effort, it is thought, more cogent than the ordinary time recording devices, in that the technical worker records his own distribution of his time to the projects to which he has been assigned. Assuming an eight-hour day for five days of the week, and four hours on Saturday, the established hours in any given month might total, say 180 hours. Work is prorated to this arbitrary period. Absence from work, although noted on the time sheet, is charged to projects, inasmuch as the projects must bear the expense, since salary is not deducted for absence. If a worker toils well into the night, he records no overtime, because he is not paid for it.

A skeleton form for this monthly time sheet, together with dummy projects, is submitted on page 601.

There is no hazard of disclosure of salaries among the staff through the medium of the time sheet, which is transmitted to the technical director and from him to the comptroller for calculation of distribution of staff expense (salary) to the respective projects.

Supplies against requisitions are charged directly to the projects for which they were ordered, and any items of equipment expense that cannot be capitalized are handled in the same manner. The items of general expense, such as power, light, heat, steam, water, cleaning, taxes, insurance, and depreciation, which may be broken down into as many accounts as is desired in any particular case, are prorated to respective projects in the same ratio that the staff expense charged monthly to any given project bears to the total staff expense.

From these monthly data there can be prepared a statement of technical department costs, monthly and accumulative, which yields an accurate picture of expenditures by men, by divisions and by projects, in relation to estimated accomplishment of the task.

In respect to analytical and control work in process, the horizontal headings on the time sheet indicate the department for which the work, primarily routine and repetitive, was performed. In some cases it has been found to be advisable to separate the analytical from the control work, since in the laboratory not all of the analytical work is for control of factory process. This differentiation is readily made by placing before the particular department designation for which the work is carried out, the letters *A* or *C*.

(Title of Corporation)
 Technical Department
 Monthly Time Sheet

Name: John Doe

Month of _____ 1930.

Estimated hours 180

Day	Projects						Consultations
	S-1	S-2	S-7	N-1	N-2		
1	4	4					
2							4
3	Sunday						
4	Holiday						
5	8						
6	8						
7	8						
8		8					
9		4					
10	Sunday						
11			8				
12			4	4			
13			4	4			
14			4		4		
15			4		4		
16		4					
17	Sunday						
18			6	2			
19			4	4			
20			4	4			
21			4		4		
22			4		4		
23	4						
24	Sunday						
25				4	4		
26				4	4		
27				4	4		
28		8					
29		8					
30	4						
31	Sunday						
Totals							
Hours	36	36	46	30	28	4	180
Per cent	20	20	25	17	16	2	100

It has been found by experience that the clerical work of tabulating and organizing the monthly cost sheet is not excessive; an instance is recalled in which four hours by one cost clerk were required for handling the complete breakdown of monthly costs for a technical staff of twelve men.

The increase in effectiveness resulting from the employment of a method of this character for the control of experimental work, follows in part from the knowledge and incentive given to the individual worker of the monthly and accumulated expense of the project in relation to accomplishment. To the administrative officers, it presents an equally terse statement of status of projects in terms of expenditure.

There is no alibi for the administrative officer operating under a docket system of research control. He has before him an exact statement of expense charged to each project, and he is at liberty to modify as he may choose the technical department's own estimate of its progress, as expressed through a monthly progress report. Decision clearly rests with him as to the worth-whileness of continuing any particular project or of placing this project in abeyance.

It is recognized that no scheme of research control can provide a medium in virtue of which results may be guaranteed in advance. The aggregate expenditure and time required for completion are equally difficult to predetermine, save where prior work in a particular field has furnished experience from which such an estimate can be made. But obstacles of this character do not prevent the practicability of setting up a monthly or quarterly budget, divided into projects, with estimated costs for staff, supplies, equipment, and general expense; and the checking against this budget of actual expense incurred. From a system of control of this character, it has been our observation and experience that there results a tremendous increase in effectiveness of industrial research. Action to this end is becoming increasingly imperative, in view of the wider publicity given to research and the closer scrutiny to which this and other non-manufacturing departments are being subjected.

Time Limit for Crediting Saving. Over what period a reduction in cost, resulting from the successful termination of a research project, should be considered as a saving, follows as a corollary from the foregoing discussion. Considerable latitude must be assumed in determining this point, depending on the particular nature of the development. If no competition in research existed, the period during which a reduction in cost could be taken as an economy might be extended indefinitely. Where competition in research is acute, a maximum of six months might be the limit. Between these two extremes, it is felt that a period of one year may safely be taken as the basis for the calculation of an economy brought about through research. Most research problems, in which the objective is not one of quality but of lowering of cost, resolve themselves into a number of projects of narrower scope that can be consummated within a twelve-month period.

The fixing of a time limit of one year as the basis for the crediting of a saving, constitutes an incentive for the technical department to concentrate its efforts on the purely profit-bearing possibilities of the project. It is of further advantage to the technical director in guiding the choice of projects

in which the potential volume saving warrants the attention of the technical department.

Growth of Organized Research. Two generations ago the achievements of research were in the main the products of individual inventiveness, and with the exception of academic groups working under the direction of a university professor, the figure of the research worker in industry was that of the genius toiling by himself, and to a large extent isolated from the business as an organization. Under these conditions, the set-up was tantamount to that of the free lance, and much work was carried out that was tangential to the real economic purpose of the investigation. From that day the trend has been steadily towards organization and directed effort to predetermined ends, so that the status of industrial research has gradually become less and less that of a wild gamble, the expense of which was chargeable to profit and loss, and progressively more and more that of a recognized subdivision of industrial activity, and as such, reducible to management.

Paradoxical as the statement may appear, it is our thought that the world has been continuously, from the most prehistoric ages, research-minded, and that this condition as a constituent factor of evolution will in all probability continue until "the last syllable of recorded time." The epoch-making era of research, into which we have only of late entered, does not signify that we have just begun to sound out the sources of wealth through experimentation, to the degree that it denotes that we have of a sudden become appreciative of its value to industry as a factor of insurance. It may be recalled in this connection that a personage of no less importance in the political and social life of the sixteenth century than Elizabeth, Queen of England, was oftentimes obliged to go to bed in the daytime in Windsor Castle in order to keep warm; and that this hardship occurred during an age in which the textile arts, painting, sculpture and ecclesiastical architecture were undergoing tremendous development. Nearly a century and a half elapsed before Franklin brought the fireplace out into the room, and demonstrated to the world in the stove that bears his name, that being warmed was not as much a matter of fuel supply as of direction and rate of heat transfer. It is not illogical to assume that if the sixteenth century mind had possessed the research consciousness of the present-day world, there would have been installed in Windsor Castle before the beginning of the 1600's a tolerably good hot-air heating system.

Progressives throughout the world are ever looking to the day when there shall be created that ideal republic visualized by Plato, wherein "wealth shall have no authority, and authority shall have no wealth." In this well-nigh Utopian scheme of things, to which the most advanced radical thought offers no suggestion for accomplishment, the progress of research, and particularly that of industrial research, has considerable bearing. For it is by the gradual elimination of all hand labor, and the tapping of new sources of wealth through research, that approach is made to that day "when the shuttle shall weave, and the lyre shall play, without the aid of human hands; then, and not until then, shall all men be free, and there shall be neither masters nor slaves."

CHAPTER VII

PRODUCTION CONTROL

BY GEORGE T. TRUNDLE, JR., *President, and THE STAFF, Trundle Engineering Company*

There is perhaps no other single factor in industrial management, having equal importance, which is so much misunderstood as production control. There seems to be so much confusion about its scope. There is certainly a disturbing disagreement as to terminology and definition. "Planning," "routing," "scheduling," and "dispatching" each may mean different things to as many different individuals. Systems are so often confused with principles. Forms are accepted as fundamentals. Routine is taken for results.

This discussion covers one of the most important and far-reaching functions in the management of industry. Nothing influences every factor—labor, material, equipment, and product—quite so thoroughly as does production control. To its lack or ineffectiveness much waste, much loss, and many failures in business can be traced. It is a powerful and profitable mechanism when properly applied, a dangerous tool if misapplied.

This is an endeavor to present the conclusions and findings growing out of experience in several hundreds of industries where earnest and serious efforts were made to effectively control production. These are offered with the full realization of the fact that others have had other experiences which may have led them to other and different conclusions.¹

Major Divisions of Production Control

Planning. Planning is used perhaps more often than any other term to describe production control. This is due, no doubt, to the fact that in the original conceptions of a specific and separate function of production control

¹ See for details on the technique of production control:

BASSETT, WILLIAM R., and JOHNSON HEYWOOD, "Production Engineering and Cost Keeping," McGraw-Hill Book Company, Inc., 1922.

DIEMER, HUGO, "How to Set Up Production Control for Greater Profits," McGraw-Hill Publishing Company, Inc., 1930.

HALLOCK, JOHN W., "Production Planning," The Ronald Press Company, 1929.

LICHTNER, W. O., "Planned Control in Manufacturing," The Ronald Press Company, 1924.

RAYMOND, FAIRFIELD E., "Economic Lot Sizes," series of six articles in *Factory and Industrial Management*, McGraw-Hill Publishing Company, Inc., July-December, 1930.

YOUNGER, JOHN, "Work Routing," The Ronald Press Company, 1930.

in organization, the idea of a plan made in advance of performance was one of the principal innovations from old practice. Production planning was recommended and planning departments were created, but the modern conception of management now includes planning as a stage in *every* phase of management and in the management of all things and all functions in the business.

Planning therefore, has become a principal element in all management. It cannot, and should not, be confined to production alone. It is too broad a term. The blue print is a plan of what to make. There is, or should be, a market plan. Sales quotas are plans. The plant layout is a plan. Cost estimates as well as standard costs are plans. The financial forecast is a plan of profits.

In addition to this, modern management goes much further than the plan itself in the control of production, and prescribes that it must also include the guidance of production throughout all the stages from the receiving platform to the shipping platform, and the coordination of all the factors at each of these stages, in order to accomplish the plan according to the time schedules.

Planning therefore, as a term, is too broad on the one hand, to be confined to production control alone, and on the other, paradoxically, it is entirely too narrow to describe the complete process of production control.

Routing. Routing is one of the elements in planned production. It prescribes the path of travel of production in the plant layout. Where this cannot be standardized, and where changes in the work itself, or in the daily production requirements cause daily or current changes in the path of travel, it becomes one of the mechanisms of production control, used continuously in dispatching work along this path of travel to the work places.

Under standardized conditions it endeavors to prescribe the shortest path of travel and to carry the work to that equipment and to those operations where it can be performed most economically. Standard route sheets must be coordinated, by production control, in the production schedule with the time element and with the quantity element, in such a way as to accomplish the desired result without confusion.

Under conditions not standard, production control continuously routes the work daily and periodically, thus combining the place element and the time element in the daily production schedule. In doing this it also endeavors to route over the shortest path of travel and to the most efficient equipment and operations, although in this it may often be found that, to meet the time requirements, work must be routed to the next best equipment and operation, and constant adjustments must be made to secure the best results from the available plant capacity.

Routing is usually entirely separate from production control, but may in some cases be a current part of production control and a daily duty.

Perhaps because of this variation, there has been some confusion as to this term. Recently a magazine article reported that a manufacturer had discarded production control. A careful reading of this article proved that what had really happened was, that having reached a large production of a standard product, it had become practical to make standard route sheets for the path of travel of the work. This has often happened and is happening constantly

in growing businesses. The point is, however, that standard routing does not take the place of production control, although it does usually simplify it.

Scheduling. Strictly speaking, a "schedule" is a list. There are schedules of freight rates, schedules of ocean sailings, etc. When applied to manufacturing, the schedule is a list of parts to be made, often in a prescribed sequence, and sometimes within a specified period.

Scheduling production then, is really listing requirements of what shall be done. It is one of the mechanisms of production control, a medium used in laying out the plan of work, but by no means is it either the whole plan itself, nor is it control, for it must always be followed by some activity to see that the schedule is put into effect.

Because it is one of the tangible evidences of a plan, and one of the visible indications of production control, scheduling is sometimes used to describe the entire function. It should always be remembered that the preparation of a production schedule does not provide production control. The technique and act of doing the work must be added.

Dispatching. Like scheduling, dispatching is one of the mechanisms of production control, but not the control itself. Dispatching properly means starting something on its way, sending it along toward some destination. In factory parlance, it usually indicates the method or process of assigning work to definite work places, and where necessary, accelerating or retarding its progress from point to point. This is its limitation. It is a current process, part of the whole, and an important one, but never to be expected to do the entire job of controlling production.

There are manufacturers who are satisfied that they have production control, when as a matter of fact, they really have only a dispatching system, or a follow up scheme, or an order chasing plan. No matter how good these may be, they are not in themselves production control.

Production Control Best Term. So we find that none of these four terms are descriptive enough, comprehensive enough, or accurate enough, to cover what is and must be included under the control of production in modern management.

What term can we use? There would seem to be no alternative than to use the term production control as most descriptive, comprehensive, and accurate for our purpose, having it understood that in so doing, the following definitions and limitations are intended.

Production Control Defined. Production, as used here, is meant to include all the processes of converting raw material into a product ready for delivery to the purchasers, usually, although not always, including the purchase of the raw material itself; usually, although not always, including the storage and the inventory of raw materials, semifinished parts and finished product; but always including all of these, where they in any way influence the continuity of the actual production that is necessary to accomplish a given result in a given time. Roughly, it is synonymous with the term manufacturing.

Control, in its broadest sense, is synonymous with management. To control is to direct or to restrain. Used in that sense, production control might mean the management of manufacturing. But that is not intended here. It would be too broad a definition, for it would include quality control

(inspection) and cost control (accounting) and methods control (production engineering, etc.). Production control does not properly include these.

Production control is concerned, primarily with the *time* aspect of manufacture. It may, and often does, combine with this, the *place* aspect, although this is really a separate problem in most cases to be determined elsewhere. It also combines the quantity or volume aspect with the time aspect.

To summarize, we find that production control uses all information which is furnished, indicating: (a) what is to be made; (b) from what it is to be made; (c) where it is to be made; and (d) how it is to be made; and then determines itself *when* it is to be made and proceeds to control this performance.

This is, of course, the ideal condition. There are variations from it. But, in so far as it is practical, production control is, and should be, allowed to concentrate only on those factors which involve the time element in manufacture.

The Need for Production Control

The report of President Hoover's Committee on the Elimination of Waste in Industry stated: "The lack of adequate methods of production control is evident in every industry studied. It is one of the outstanding weaknesses." This report was made after studying major industries, and is evidence that production control had not yet been accepted in principle by important industries.

The findings of the committee are significant, when we remember that those who have had ripe experience with adequate applications of production control, have come to know that it is a necessity and not a luxury; a profitable investment and not an expense.

Service to Customers. Production control endeavors to give the best service possible, consistent with available capacities, and at the same time to secure the lowest possible costs. In addition, it tries to balance these two factors so well that the first is not accomplished at the expense of the second, and *vice versa*.

Although service to customers cannot be evaluated in dollars and cents, it is nevertheless accepted as having great profit and loss potentialities. For this reason, and sometimes also because the sales department is permitted to emphasize this feature as important to sales volume, the service requirements are usually placed ahead of costs.

Without in any sense intending to detract from the importance of service to the customer, it must nevertheless be admitted that there are cases where service has been secured at a cost out of all proportion to any possible gain. This occurs, for instance, where the steady flow of production is constantly interrupted by "special" or "rush" orders. In other cases it occurs where a stock is carried in quantities too large for current needs or consisting of items moving too slowly, with the result that too large an inventory is carried with too little turnover. This is often a cause of large hidden loss.

Production control, therefore, recognizing the loss described coming from inadequate service on the one hand, and too costly service on the other, endeavors to provide the flexibility in the flow of production necessary for

adequate service, and also endeavors to provide the limitations of expensive interruptions in this flow of production. This requires many compromises and can be accomplished only through the application of much good common sense and impartial judgment. The net profit to the Company in the long run must always be the deciding factor.

Securing Lowest Costs. Aside from the matter of service, production control aims at lowest production costs possible under existing conditions and with available facilities. This, when analyzed, means the following:

1. Plant equipment must be used to its utmost capacity on that work which it can do most economically.

2. Plant space must be used to its utmost capacity, at the same time eliminating congestion which might hinder the orderly and rapid movement of material or the efficiency of operations.

3. Sufficient labor must be provided and used to its greatest effectiveness on operations where its training and experience can serve best, and where it can earn for itself and for its employer the greatest possible return, eliminating all avoidable delays or waits for materials, tools and equipment, instructions or the like, and reducing labor turnover to a minimum.

4. Work must be put through in carefully computed economical lots, reducing set-up cost and too frequent changes in operations.

5. Raw material must be provided in proper quantities at the right time and at the right place, to prevent, on the one hand, delays in production, and on the other, congestion on the factory floor.

6. Work in process must be moved promptly from one operation to another in proper sequence to eliminate waits at work places and prevent congestion on the factory floor.

7. Product must be finished in proper quantity and of proper quality, and in satisfactory variety to comply with the requirements of customers, without creating unnecessarily large or slow-moving inventories.

8. All the above factors must be coordinated to create a smooth and steady flow of production, synchronized with requirements both as to quantity and quality, and balanced to provide both adequate customer service and lowest possible production costs.

A careful consideration of the above leads us to the conclusion that production control is, more than anything else, the persistent coordination of many variables. Its importance and effectiveness would therefor seem to increase in proportion to the increase of these variables.

Three Principal Losses. When coordination does not exist, losses of three kinds, are usually found:

1. Losses due to the failure to use plant facilities including space, equipment, and labor to their fullest capacity and effectiveness. These are the full responsibility of production control except, of course, where the sales requirements are less than the real capacity provided.

2. Losses due to unnecessary delays, waits, interruptions, and readjustments in the flow of production due to lack of materials, insufficient labor, lack of tools, jigs, and fixtures; lack of proper equipment available at the right time; lack of, or incomplete, instructions; too frequent set-ups and changes in operations; and uneconomical lots. All these are entirely the responsibility of production control.

3. Losses due to carrying excessive or unbalanced inventories, either of raw materials which might be caused by poor synchronization or lack of intelligent preplanning; or of work in process, caused also by poor planning or else by failure to move material in process promptly or in an orderly manner, or by improper lot sizes; or of finished goods, caused by improper lot sizes, poor coordination of operations, having work in process too long, or lack of intelligent preplanning. All these losses, often not evident unless carefully investigated, and in many cases quite large, are also the full responsibility of Production Control, except where they are influenced by general policies as to (a) advantageous purchase of raw material when favorable prices prevail, thus accumulating stocks above normal, or (b) maintaining unusually large and diversified stocks of finished goods to meet peculiar service requirements and to facilitate selling.

Summary. The following are reasons for providing adequate production control of manufacturing:

1. Because competitive manufacturing today demands orderly procedure and controlled management.
2. Because service to customers, which has become a profit and loss factor, must be controlled so that it is neither inadequate on the one hand, nor too costly on the other.
3. Because it is necessary and advisable to secure the extra profit representing the difference between actual costs and possible minimum costs, which can be secured by eliminating the losses caused either by failure to use plant facilities to full capacity, or by avoidable delays and interruptions to the smooth flow of production, or by carrying an excessive or unbalanced inventory of materials, or to all three of these influences.

Essentials for Complete Control

There are four main essentials, which are needed regardless of the size or type of the operations, to make the application of production control complete and fully effective. They are discussed in the following:

1. **Should Cover Every Factor.** The control needs to be entirely comprehensive, should cover every detail, and apply to every factor which has even the slightest influence upon the final results.

It is not enough to have an order system and to plan and control the sequence of the orders. Back of the individual orders, the general plan of production for the company as a whole should be developed and planned. Then the general production schedule and the master schedule is to be developed and planned, all in sufficient detail and so flexible that the influence of the individual order can be seen as regards the whole requirements, and so that all the orders may be given their proper places in the whole program and thereafter easily changed from one position to the other as required by changing demands.

Each order should be broken down, the operations needed for its execution analysed, their sequence established within each order and then within the whole production program. The performance is then to be controlled not only up to each department but right to each individual operation and machine.

In other words the control of orders should go back as far as their acceptance and then forward to the last operation and machine needed for their production, and preferably for their shipment to the customer.

Neither is it enough to control and plan only the manufacturing operation; material, labor, tools, jigs, and fixtures, blueprints and instruction, and every single element affecting performance should also be covered by the control plan. Nothing less than complete control of all of these factors will suffice. This control should be both comprehensive and detailed. It should take nothing for granted. Under no circumstance should it be denied access to any one of these factors.

2. Right Kind of System. There should be provided sufficient of the right kind of system, forms, and clerical routine to (a) collect adequate detailed information needed for planning; (b) inaugurate work and give complete instructions and the detailed information needed in performance; and (c) provide records of current and past performance.

These records should be prompt, adequate, and usable. Only enough system for the purpose should be installed. Any more than is needed constitutes the much to be dreaded "red tape" which only makes for confusion and congestion. Duplication is to be watched for and avoided.

Nor should any of this system or any of these records be considered any more than tools. They are inflexible until judgment is applied, and flexibility is one of the chief requirements for adequate control. They are servants; never masters. They aid, but in themselves never control anything.

3. Competent Personnel Properly Authorized. Sufficient personnel should be provided and given proper authority so that its influence will be wide enough to get the desired results.

How much personnel will be needed depends upon the size of the operations, but it should never be cut to such a degree that it cannot function properly or cover all details essential to full control. On the other hand, it should not be larger than is needed, nor more expensive than can be justified by possible returns.

This personnel should be placed in such a position in the organization that its influence in its field will never be questioned. On the other hand it need never be given any authority beyond the scope of its particular field. Never should its responsibility be hampered by petty jealousies of other members of the organization, or by lack of support of the management.

This personnel should be trained to handle the work properly. Incompetence or lack of force will soon defeat the purpose of the plan. It should realize its place in the organization, the importance of its work, and be inspired by a genuine desire to serve all the functions with which it comes into contact.

4. Proper Spirit. Finally, and of no small importance, is the inculcation of the proper spirit in the entire organization from the president or general manager down to the last man in the factory.

A position should be given to production control in the organization, designating it as one of the major functions. Other members even including the general management should be made to respect this position. The general management and all others are to work through and not beyond it with respect to all factors included in its scope. If it is considered in any way superfluous

it should be thrown out; it no longer serves any purpose. If it is considered too weak, it should be strengthened. It should never be permitted to just "get by." It needs to be a force, a strong influence, a factor to be reckoned with in every step of the whole job of producing.

To gain this respect and protect this position, the staff undertaking the work of production control should through its industry, its tact, its respect for and reference to the judgment of others, its intensive application to its own job, its force in securing compliance with its stated requirements and its own willingness to defend, aggressively, that which it knows is necessary for greatest results, prove to all the other functions that, while it is considerate of them, it is also competent to do its own job and will insist on being permitted to do it.

This intangible thing—the right spirit among those who undertake the work of production control and among all those others with whom it comes into contact—is so important that, unless it can be attained and maintained, production control should not be attempted, for it is doomed to failure even before it starts.

The four essentials to complete and successful production control are: (a) comprehensiveness, (b) right kind of system, (c) competent personnel properly authorized, and (d) proper spirit in the organization.

Installation of Production Control

The General Plan. A general plan exists in every business. It may in some cases be unwritten and not easily recognized, but if it is no more than the expression of current policies of the company, no matter how vacillating, it does exist. In other cases, often of necessity, the general plan is carefully laid out; it is written; it is a rule and guide, sometimes even the absolute law of the company. It is a simple thing in some businesses—very complex in others.

With all its wide influence, this general plan is sometimes a matter of tradition and precedent. For instance, there are companies which for years have made an established quantity of certain products regularly for the same customers, according to the same specifications and quality requirements. It is expected that exactly the same thing will be done in the future. That is their general plan.

In other cases, there are companies which never know from day to day what orders to expect and what demands will be made upon their manufacturing facilities. They may produce various grades, sell in large and small quantities and comply with all sorts of demands from their customers. It may be profitable to do so. Their plan is hard to set down, it is involved and intangible. But this very vacillation and demand for instant flexibility is the expression of their general plan.

Somewhere between these two extremes are found the conditions in the majority of manufacturing companies, where there are established policies as regards what to make, what quality, what varieties and at what seasons. They also have estimates of their productive capacity either in the form of standard production rates or at least general estimates of some kind. They

have some knowledge of what to do except in the way of orders. This information may be general or may be secured from well laid out sales quotas. A general plan is usually written to cover all these expectancies. If it is not written, it usually can be, and should be.

To set up the general plan is the first step in production control. The general plan is in fact a sort of spinal column of the production control plan. If the first is weak, so will the second be. If the general plan is well laid out, definitely, and backed by forceful policies, production control has the best sort of basis upon which to build.

The Master Schedule. The master schedule is a direct outgrowth of the general plan. It serves to allocate the available productive capacities to existing orders as far ahead as is practical. Based on estimates, which are either general or, if possible, made up from standard production rates, and dealing in terms of orders or in terms of main classes of product, the master schedule is the first place where the quantity or "how much" element is coordinated with the time element. It is the first expression of a plan of what to do, in what quantity and when to do it. It usually stipulates finished dates only, taking no cognizance of departmental time or operation time, although sometimes it can be broadly broken down and can designate finished dates required in each department, or at various stages, as a general guide.

It is in reality the first command resulting from the general plan. It commands the completion of an order or group of orders, or a given quantity of certain products, by a definite date, basing this command on known productive capacities. It is also a forecast of expected orders or anticipated commands, which later will become actual. It stipulates sequence as a general guide to further planning, although, as a rule, this is the sequence of the required finished date and not the starting date. The sequence of the starting date of orders needed to comply with the required finished date may be utterly different. The varying time in process for different products, different units, and perhaps different quantities governs the starting date plan.

One thing which is important is that every single order, no matter how small, should be given a definite place on the master schedule. Only too often what are considered too insignificant or too small orders are omitted, and this immediately minimizes the value of the master schedule, for often the cumulative effect of small orders is very large.

The disturbance coming from the interpolation of unscheduled small orders in the regular flow of production is often so great and far reaching that the entire schedule becomes worthless and undependable. An addition to the extra cost of production due to unexpected interruptions and planned changes is often so great that it absorbs the possible profits to be derived from the small orders, consequently every single order, every single lot, should be included in the schedule.

If the production is for stock, the stock orders covering each product indicating the quantity, and the date needed, should always take into consideration two very important factors, the economical lots and the profitable turn over of the whole inventory. Through the proper layout of the master

schedule, these two factors can be properly handled, in fact it is here they should be cared for.

It is important that the master schedule be so designed that it is flexible and that it can be changed and adjusted easily. It may be changed often, and under present day hand to mouth purchasing these changes will be more numerous than ever. These changes originate from either (a) the receipt of desirable new orders which must be given preferred position on the schedule, or (b) the necessity to set back or set forward orders on hand in order to satisfy demands of customers, or (c) unavoidable breakdowns in the manufacturing facilities setting back certain orders, or necessary revisions in the production estimates which may set back or set forward certain orders.

However, the fact that the master schedule will often be changed should never be an excuse for not making or using it. The more changes there are, the more difficult it is to control production without its aid, the more important it is carefully to lay out the work and preplan it so that these necessary changes can be provided for, and so that there will be as little dependence as possible upon memory and hasty judgment.

The Master Schedule should be kept in such condition at all times that it is possible to tell the effect of any additional demands on all the rest of the schedule. For instance, were the sales manager to have in mind the acceptance of an order which depended upon a delivery date in advance of the regular schedule, it is not enough to be able to ascertain if this one order can be produced on time. What is often more important is to know just which other orders will be affected by such addition to the schedule, and how much they will be affected. All the orders and their accomplishment must always be in mind. The production control staff will desire to cooperate with the sales department in accepting all orders possible and they should keep themselves informed so that they can give complete information as to the influence of any changes, and in that way give the sales department its choice. Only too many cases are seen where in the enthusiasm of the moment orders are accepted with the idea that, "We'll manage it somehow."

A good practice, which can be followed after having enough experience with a master schedule, is to allow a definite percentage for expected changes or for additional demands, when laying out the plan.

Forms for Records. The design of the master schedule which will make it sufficiently flexible and yet entirely practical, depends upon the individual case. The choice ranges all the way from the simple ruled sheet, through the different kinds of loose leaf sheets, card files, visible card and strip equipment, various graphic charts, up to the numerous designs of control boards, graphic and plain. No single design is best for all cases, but from among them a suitable type can be selected.

The choice is important. It is hopeless to try to schedule a complex production schedule without some type of easily read and quickly adjustable equipment. On the other hand it is a waste of time to use an elaborate production board to cover a simple production having very few changes.

Often after the master schedule has been laid out, together with a follow up, or "chasing" scheme, it is deemed to be complete production control.

In such cases no matter how well this has been done, it is really just a start; as the department, the machine and the operation must be controlled in order to get results.

Departmental Control

Departmental control requires:

- a. Breakdown of the production orders scheduled under the master schedule into shop orders, or departmental orders,
- b. Further breakdown of these into their various elements, including operations, machines, tools, jigs, fixtures, labor, materials, blue prints, and instructions,
- c. The preplanning of all these in a departmental schedule, somewhat like the master schedule, allocating the available facilities in such sequence that the finished date required for the entire order by the master schedule, will be met.
- d. Persistent follow up, constant adjustment, and continual coordination of all these elements so that the plan will be carried through.

Analysis of Operations. The analysis of operations is really a study of the individual operations necessary to produce the products called for on the shop orders, and needed in the manufacture of each integral part of every product. In many cases, where large quantities of a given product are made, standard operation sheets can be made showing the best methods, and routing the work in proper sequence. Such sheets are usually provided by the production engineer, and show the standard production rates required for the performance of each operation. Where these are provided the work of planning is much simplified.

Where production is not so standardised, the operation analysis must be made for each separate product on the order. This requires a detailed knowledge of the available equipment and facilities, and a working knowledge of how each operation is performed. Usually the foreman should be consulted in laying out this plan of operation, for close cooperation is needed here.

Sometimes it is found that economies can be secured by slight changes in design which will not affect the quality or practicability of the product itself. This requires cooperation between the designing or engineering department, and the production control staff.

Sometimes this study of operations, which as a rule also requires the study of the material specifications, shows up opportunities for the economical substitution of materials, using either cheaper materials or materials which may be in stock in surplus quantities; or which if not cheaper, may be especially desirable to move. These should be pointed out by the production control staff.

With some experience, and with the cooperation of the manufacturing foremen and supervisors, the production control staff usually becomes adept in analyzing operations, and are ever alert to point out possible economies.

The layout of operations should finally include an estimate of the time needed for the performance of each operation, taken either from standard rates set with the aid of time study or from carefully made estimates.

Planning and Controlling Labor. With the operations analyzed and laid out in the departmental schedule, labor requirements can be computed and planned. To have enough and not too much labor available at the right time and in the right place, to assign this labor to those operations which will carry out the schedule as needed, to keep this labor fully employed—this is the aim of production control.

When there is no such control, a surplus of labor usually follows, first because the lack of exact information fosters the maintenance of a force large enough for emergency requirements; and second, with no systematic control to prevent delays and eliminate interruptions, stabilization is impossible.

With proper planning of labor, advance notice can be given the employment department or the foremen who are responsible for employment, giving them opportunity to secure the right kind and right number of workers. It is also necessary to develop in advance a daily labor schedule, assigning definite work to each man, for the use of the foremen in giving out work. In other cases, labor can be dispatched through a regularly organized dispatching plan, with dispatch stations located conveniently, where workers can come for instructions, thus relieving the foremen of this detail. Which plan is used depends upon the individual case, but some plan, for daily and even hourly assignment of work according to preplanned schedule, should be arranged for.

To care for absence, illness and other emergencies, flying squadrons are often arranged for, consisting of a group of versatile workers capable of substituting on all the operations. In many cases such a group is indispensable to the maintenance of the schedule.

So the planning of labor, assigning or dispatching it to each individual task, and then providing it with necessary materials, tools and instructions to prevent all delays and interruptions, is desirable (a) because it pays to do so (b), because it is necessary to carrying out the plan, and (c) because it keeps the workmen satisfied.

Planning and Controlling Material. We have seen that production control has definite relationship to, and influence upon, materials, and must concern itself with materials at specific stages in the production flow, if the control is to be effective. These can all be briefly summarised under four headings as follows:

1. From orders, or from material specifications where standardization permits, raw material requirements are accumulated in detail, combining quantities taken from many orders or material specification sheets, in order to facilitate purchase and secure better prices on large volumes. These material requirements are furnished to the purchasing department far enough in advance to allow time for both negotiations and delivery from sources of supply. Where raw material stores are maintained, these accumulated material requirements provide the basis for a check of inventories to make sure that necessary material is available, and to discover any prospective shortages regarding which the purchasing department can be notified and steps taken to supply these shortages. The production control's main interest, here, is to have the right kind and right quantity of material ready to start through the factory on time.

2. To secure minimum production costs and at the same time provide most frequent turnover of inventories, economical lots are calculated properly to start work through the factory.

3. To control flow of production, to eliminate delays and prevent congestion, and to hold down the inventory of work in process, production control next controls the movement of material through the factory, so that it is carried along according to the pre-planned sequence, so that its movement is orderly, rapid, bringing each lot to the right place at the right time.

4. From information on hand as to present and prospective business, the production control staff lays out all the raw material requirements and furnishes this information to the purchasing department in advance so that sufficient but not excessive inventories are carried, of the types and kinds of materials which will move quickly enough to accomplish the greatest turnover of this stock investment. Through the economical lot and the control of the movement of material in process, the total quantity of process inventory will be held to its proper levels. Throughout the entire planning, scheduling, and control, the inventory of finished products, needed to give adequate customer service and at the same time provide the best turnover of the finished product stock, is provided and maintained. In all this phase of the work it will be seen that the principle objective is the conservation of the company's investment in materials.

Controlling Equipment. It is now an axiom that idle equipment or excessive equipment is an item of expense which needs to be minimized. Fixed charges, if nothing else, indicate the value of machine time.

As regards equipment, production control has these objectives. It must plan and control the production (a) so that all equipment is used to its greatest capacity, (b) so that it is used on the classes of work which it can perform most economically, (c) so that the work is dispatched to each machine in such sequence that the planned performance will result and the schedule will be met, (d) so that it is properly supplied with material, and (e) so that the necessary labor is provided to operate it and keep it running.

This requires the careful matching of the capacities of each piece of equipment with the requirements of the established production schedule as laid out from the analysis of operations and taken from the standard routings if they are provided, or from current routings of work to be done. It requires also an instant knowledge of breakdowns so that necessary adjustments can be made.

The assignment of work to equipment is as a rule cared for through the dispatching of labor, although in some cases it is more practical to dispatch to the machine, making sure, of course, that the machine is fully manned.

Where an unbalanced schedule makes it impossible to use every piece of equipment on work which it is best suited to do, careful adjustments of the schedule should be made so that the greatest effective capacity of the machine is obtained.

Controlling Tools, Patterns, and Molds. In almost every industry certain tools, jigs, and fixtures are needed in the operations, either by labor or as an adjunct to equipment. Wherever these are required especially for the

execution of an order, they become the definite concern of production control, for they must be available at the right time. If they are purchased in stock quantities or are made elsewhere to special designs, production control should work closely on these requirements with the purchasing department just as it does on raw materials. Where this feature is so extensive that tool designing and tool making departments can be supported as a part of the company's regular operations, it is usually well for the production control to cover these departments just as it does all others, and plan and control these operations so as to make its control comprehensive.

Production control should also keep closely in touch with tool storage, making sure that special tools are returned to storage, kept in proper repair and in such condition that they will be promptly available when they are again needed. By keeping in touch with what is available, they may often see ways of using old tools and fixtures, perhaps with some minor and simple changes, instead of purchasing.

What has been said regarding tools applies likewise to patterns, models, and samples.

Plant Layout. A standard plant layout put on paper, or in some cases made up in models to scale, is desirable for many purposes. Production control should study such layouts carefully so as to be familiar with the path of travel of all production.

Economical Lots. The economical lot is that quantity which can be produced at the lowest unit cost, including both manufacturing cost and carrying charges.

Many variables influence the size of the manufacturing lot, among which the more important are:

- Tool quantity required.
- Cost of set-up and preparation.
- Material cost per unit.
- Labor cost per unit.
- Overhead cost per unit.
- Space charges for storage.
- Interest rate on invested capital.
- Obsolescence.
- Deterioration in storage.

Attempts have been made to write a formula that includes most of these factors. The result is interesting as an exercise in mathematics, but is too cumbersome for every day use. It is possible, however, to obtain a simple formula of practical value for any given manufacturing plant, by eliminating the factors which are unimportant in that particular set-up.

The simplified formula can be expressed graphically, so that the results can be read directly from the chart, without computation.

Production Standards. Wherever standard production rates, made by job standardisation, exist for use in wage payment or costing, they can also be used for production control, since it must have available for purposes of planning some estimates of what to expect from actual performance.

Where such rates have not been established, it is often possible to use the estimates which have been established for estimating and quoting prices.

This has the advantages, that if the plan is based upon the estimated rates established in the price, and control is applied and accomplishes the plan, the expected profit will result.

Relationship of Production Control to Other Functions

Production control has some relation to nearly every other function in the organization. It draws from some divisions the information it needs; it controls the operations of others; it carries out the plans of still others; it furnishes information to some; while it cooperates with still others to accomplish certain results; or it may have all five relations to a few. Its more important relations are to general management, sales, purchasing, engineering, and cost accounting.

General Management. Basing its entire production plan on the company's general plan, which in turn is taken to express the company's policies, production control aims to carry out the general policies of the company as they pertain to production. It may logically be considered one of the principal mechanisms of general management in getting desired results.

In addition it maintains records which can be supplied general management to guide it in some of its important decisions and to aid in its judgment of results of other functions.

To a degree at least, it is unique in that it is a coordinating influence. For while it has definite work to do itself, it must bring together the accomplishment of various other functions and combine them for the common good. In this regard it also serves the interests of general management.

It should be an aid to general management in making decisions as to the expansion of productive capacities, the purchase of new machines, and in making capital investments having to do with production.

Sales. From sales plans and sales quotas, production control secures its information as to customers requirements, and uses this to establish its objectives. In many cases it receives orders and instructions from the sales division. In making its plan, it endeavors to carry out the desires of the sales division as to customers service so far as is practicable.

It provides advance notice to sales of unavoidable exceptions to the desired customer service, thus cooperating to maintain company goodwill. It cooperates in arranging for special service where this will add to such prestige.

It warns sales when costly demands are being made, or when such special demands will interfere with service to other customers or the general plan. It supplies sales with prompt information as to the status of various orders to help sales satisfactorily to answer customers' inquiries.

Purchasing. It usually supplies purchasing with information as to raw material requirements, planning far enough in advance to allow time for purchase and delivery. It cooperates with purchasing in holding down the company's investment in inventories. It cooperates with purchasing in moving materials and in eliminating material wastes.

Engineering. From engineering it secures information as to design, what to make, what materials to use, the material specification, and what quality standards are to be maintained. This is known as product engineer-

ing. Also from engineering it secures information as to operations, needed, standards, routing, sequence of operations, plant layout and standard production rates. This is what is known as the production engineering branch.

It must keep in close contact with engineering to secure all this information in time to accomplish the desired plan. In some organizations, it may even plan and control the activities of the engineering division, just as it does production. In every case it needs to have a definite understanding with engineering as to when drawings, specifications, designs and all the necessary information will be ready. For these are usually the foundations of the whole plan, and any delay will hold up the entire schedule all along the line.

Cost Accounting. Where standard costs have been established, production control aids cost accounting in the attainment of these standards by basing its plan on such standards and then exercising the control necessary to accomplish the plan. Thus in a larger sense, since standard costs constitute the cost accounting divisions plan, production control endeavors to carry it out. Next it assists cost accounting in measuring the discrepancies between the standard and actual performance and points out errors in the standards.

Where there are no standard costs, production control cooperates with cost accounting in collecting cost information, supplying it with records of results and in turn receiving from it certain data.

In all cases there must be a fine sense of cooperation between these two divisions. They use many identical records and should aim to eliminate all duplication and extra paper work by each amplifying its own records to supply the needs of the other, where this is practical, and in all cases by prompt release of records one to the other. These two divisions have much in common; there are many places where they meet and in fact many places where they can overlap. Therefore, there is room for petty jealousies and self centered competition. However, only ill advised individuals will forget that, after all, they are both working for a common result and that this result is the important thing. A little intelligent give and take will soon smooth out any rough places on the road which these two divisions may be traveling.

Relation of Production Control to Shipping. The above are the broad relationships to the major functions in the organization. In addition production control has some very definite relations to what may be termed subordinate functions. Important among these is shipping.

In many cases shipping is sharply separated from production, and production control is expected to control operations only up to the door of the shipping department. Even in such cases, there should be a close relationship, and production control should supply shipping with as much advance information as possible so that the latter can arrange to plan its work based upon the volume which is expected from production.

In other cases, shipping has become more complex, involving extensive shipping floors, storage rooms, and much handling. It is usually found advisable to have all of this planned and controlled by production control, thus extending the control up to the point where the product is placed upon the common carrier.

Relation of Production Control to Inspection. One other function with which production control has much to do is inspection. It must realize of course that inspection, so important in maintaining quality standards, must in no way be influenced by the requirements of the production schedule and will through the rejection of substandard product often interfere with the accomplishment of the plan. Production control will have to accept this and become reconciled to it, but it can also arrange to work so closely with inspection that it will know of such rejections promptly and make the necessary provision to replace them.

It is often possible to make allowances, dictated by experience, by a percentage added to the quantities put through, to cover expected rejections by inspection, and thus have left approximately the net amount desired.

The Production Control Staff

Often, when the installation of production control is contemplated, these questions are asked: To whom is it most logical to assign the work of production control? From whence shall we collect the production control staff? The answers must necessarily vary with the conditions in each organization.

Much of the work, many of the details, all of the planning in one way or another, and in fact about everything which is to be done by production control, has been going on, and has been done by someone previous to its introduction as a definite separate function. It may not have been done as intelligently, because of the lack of certain information; it will hardly ever have been done as effectively when not concentrated; nor will it have had the influence it must have to get the fullest results until it coordinates all the factors. But just the same, much of it has been going on, many of the motions had to be gone through. There almost always exists in the organization a certain individual, if not several, who have had most of the necessary experience for this work. It may be an assistant superintendent, one of the better foremen, an order clerk, a production engineer, one of the cost men, or one of many others. Qualities most essential to the success of this work are, familiarity with the office routine of the business, with all of the manufacturing facilities of the company, with the product and with the personnel of the organization. The other outstanding requirement is the ability to work tactfully with everybody in the organization from the chief executive to the last laborer, and to gain their cooperation. These qualifications are generally found within the existing organization and should be used where possible.

With someone chosen to head the staff, it will be found as the work is started, that production control will begin to undertake some of the details of other sections and offices. As the work in these other sections can be rearranged, it is often found that clerks can be released from those sections, and transferred to the production control staff, and in time that staff will have been organized.

Where the organization in existence is weak in talent, undermanned, or where the transition must be made as quickly as possible, talent from outside

will have to be selected and trained to do the work. Usually, by carefully introducing the work step by step, by arranging and rearranging the various details of the routine throughout the organization, it is possible to build up the staff, as well as the head of the production control division, from the existing organization. It may sometimes be advisable to use the experienced members of the organization in the production control, and replace them temporarily from the outside with new personnel, until such time as final adjustment of all the work can be arranged. Whatever else is done, if production control is undertaken, its effectiveness should never be lessened by the use of incompetent personnel or by attempting it with too little help. If it is desirable at all, it is usually so desirable that it can be made to pay its way. It can never prove itself, unless it is well and fully organized.

Cost of Production Control. Much of the work involved in production control was going on previous to its introduction, divided among many, and experience has shown that a rearrangement of the work merely transfers some of the personnel from other sections to the production control staff. Production control undertakes many of the details previously handled by the foremen and other supervisors and in time it is often seen that either the foremen can cover larger forces thus reducing the number needed or some assistants, clerical or otherwise, can be dispensed with. In either case the result is a reduction in the cost of this supervision which will go far to balance the expense of the production control staff.

It should not be expected that such results can be secured overnight, for there is a period of transition when some investment will have to be made.

Forms and Systems

It may appear odd to the reader that thus far so little mention has been made of the forms and systems of production control. This omission is intentional.

First, because all the space already used would not be sufficient to cover a discussion of this topic alone. The systems and the forms needed will vary greatly with the individual cases, as to the number, their design and type, their execution and their use. There are hundreds of forms, each of which has been effective in its particular use, but none of which could be recommended for all purposes. While general types of forms can be standardised, the individual forms themselves seldom can be. It follows that the system and the forms needed for production control must therefore be separately and specially designed and laid out for each different installation.

Second, since forms and systems are really just the mechanisms and tools through which the underlying principles of the work will be carried out, it seems advisable to emphasise fundamentals rather than the mechanisms and tools for unless the former are understood and complied with, the latter will secure only limited results.

To do this, it is well to approach the problem much in the same general manner as one would approach the construction of a railroad, first making a survey of the path over which the routine must travel, at which points various information will be collected, to what destination it is to be carried

and where it will be used; then laying out the sequence of this routine, indicating when it will be needed and when it must be ready to supply this need. Finally selecting the equipment, or in other words the forms and methods best suited to carry this information over the route so that it will be ready at the right time.

This specifically involves a knowledge of:

1. What information is desired.
2. The source of the information.
3. The route over which this information must travel for its collection and use until it is finally filed away.
4. Who will use it, and where it will be used.
5. When it must be available.
6. The relative importance of this information, as regards use, promptness, accuracy and descriptive detail wanted.

With these features in mind the necessary forms and method can be selected or specially designed. Sample forms may be used for guidance and the more experience the designer has the more immediate and effective will be the result and the less experimentation will follow.

These essentials must be kept in mind:

1. Simplicity is a virtue. Only as much and no more than is absolutely needed should be provided. Each new form or method must prove its value. Extra, miscellaneous forms, or miscellaneous columns in forms, only lead to confusion and require extra effort. There must be a definite purpose and use for every item.

2. Forms should be designed so that they require a minimum of effort in their use. This can be facilitated by the arrangement of the form, the use of colors in paper and printing, etc.

3. Forms must not be expected to cover too much. Sometimes very ingenious designs have defeated their own purpose, because they were too complex for the speed and facility with which the information must be collected, and also for ease in the use of the data.

4. The movement of the routine should always be forward. Retracing steps in the system usually causes confusion, delays, duplication of effort, and general ineffectiveness.

5. The system should be designed so that it is not "over the heads" of the personnel who must be depended upon for its execution and use. For instance, it is foolish to expect laborers moving materials to fill out complicated forms and reports. And schedules and dispatching forms must be so simple, definite and to the point that they will neither be misunderstood, nor require the application of unusual intelligence.

6. Duplication must be watched for. What will serve two purposes must, as far as is practical, be made to do so. Good routing of the information and prompt use and clearance to the next point of use will do much to facilitate this. Carbon copies and their prompt distribution will also help.

7. Above all, what should be kept in mind is that the use of the information is paramount.

To summarize, the system must be especially designed for each case, using past experience, and a complete knowledge of the basic principles of the production control plan which is to be applied.

Graphics. To cover the subject of graphics in proper detail would require a separate volume. It can only be pointed out here, as simply as possible, that perhaps in no other single division in business management can graphics be applied to such a degree of usefulness, as in production control.

Graphs have for their chief objective the quick visualization of many details, the emphasis on particular points of information, and the facilitation of the study of comparatives. Graphics are to business information what illustrations are to the newspaper.

The type and kind of graphics to be used should be especially designed. There is a wide variety to select from, and some will do the job better than others. Wide experience with the whole field of graphics is therefore to be desired in the person who is to develop production control.

Such matters as the general plan, the master schedule, the departmental plan, the dispatching of labor, machines and operations, the movement of materials, the route of the work, the machine down time for various reasons, the general fulfillment of the schedule, the keeping of delivery promises, the volume of work ahead, by departments, by machines and in total, all comparison of performance with standards and with the plan—all these and other items can be shown in graphics or in combinations of graphic arrangements with tabulations.

Symbolization. Symbolization is to descriptive business data what shorthand is to letter writing. It saves time both in recording information and in using it. These symbols may be numbers, letters, decimals, abbreviations, or descriptive combinations of letters such as the mnemonic code.

Some type of symbolization is a valuable tool in production control. Such things as plants and buildings, departments, workmen, machines, operations, types of materials, products, product parts and subassemblies, paths of travel—all these and others can be symbolized and should be wherever advisable.

Application of Production Control to Various Classes of Industry

Classification of Industries. Obviously, it is impossible to discuss in detail the many variations in business and their influence upon the application of production control.

However, industries may be broadly classified as follows to show the variation in application of production control:

1. Continuous processing.
2. Repetitive manufacture.
3. Made-to-order manufacture.
4. Jobbing manufacture.
5. Engineering manufacture.
6. Construction and building.
7. Standing-order manufacture.
8. Warehousing and shipping.

Each of these classes will be described separately with an indication of those phases of production control that are of greatest importance to each class.

Continuous Processing. Under continuous processing are found those businesses which convert raw materials, usually in crude condition, into one or a few products, putting them through a series of connected machinery and operations. These include paper making, cloth making, and weaving, chemical and related industries, milling of grains, steel manufacture, etc.

Production control, in such businesses, concerns itself first, with the maintenance and repair division, controlling this department and all its operations, so that it will function effectively and economically in keeping the wheels turning. It will analyze the work to be done, establish the standard gangs required for emergencies and consider how they can be kept occupied during intervals between breakdowns. It will control the supplies, parts, and tools needed, so that without too large an investment in spare parts, those needed are available in emergencies. It will consider which of these parts can be made on the premises, using the spare time of the mechanics who are kept available for breakdowns. Second, production control will arrange for and schedule the check-up of the product as it goes through the various stages of the process, making sure that the product is passing each one according to specification. Finally, production control will plan carefully in advance to keep the expensive units working steadily on what is needed most; will see that raw materials are available as required; will calculate the economical lot and will control the finished goods inventory.

Repetitive Manufacture. Repetitive manufacture represents a large portion of standard products, made in large quantities to relatively few different designs and sizes, and usually for stock. Our American tendency to mass production of standard articles has been steadily increasing the number which can be included under this group until now we find most daily necessities made in this way.

All phases of production control are valuable with this class of industry. Material, its quantity, progress and movement; the economical lot; the raw material requirements; the finished goods inventory; labor, its schedule and assignment; equipment, its maintenance, assignment and use; supplies, parts and tools, their consumption and requirements; these and all the usual features already discussed in detail are involved and should be preplanned and controlled.

Production control will arrange for and schedule the check up of the product as it goes through the various stages of the process, to be sure that it is made according to specifications.

Made-to-order Manufacture. The made-to-order group is the next stage away from repetitive operations and differs from repetitive manufacture principally in the fact that the product is made specially to fill orders rather than for stock. This group includes specialties of every kind, parts or subassemblies which go to make up other products, and the variations occur in the sizes, designs, and quantities to be made rather than in the kind of product, materials used, and operations.

Production control concerns itself first with the careful preplanning of the orders in the manufacturing schedule, working back from the required delivery dates. Having a large number of orders and separate lots requires careful analysis of the operations necessary for each lot and a close check-

up of the work in process as there is less opportunity for the processes themselves to set the pace and carry the work through.

Emphasis should be placed upon the raw material stock control, avoiding those small quantities of surplus material which will move slowly or not at all.

Jobbing Manufacture. Jobbing manufacture is where, within certain limitations, almost anything will be made. The limitations consist usually of the kind of material which is to be used. In this group are included some foundries, machine shops, carpenter shops, etc.

As with the made-to-order manufacture, production control concerns itself first with the careful preplanning of the orders in the manufacturing schedule, working back from the required delivery dates of the orders. Again careful analysis of the operations and a close check-up of work in process is necessary.

Blue prints, material specifications, tools, patterns, models should be as closely controlled as the operations and delivery dates. Raw material control is of less importance than in the made-to-order manufacture as material may be purchased partly according to orders.

Production control should further concern itself with controlling and scheduling labor and machines, as the possibility of idle labor and equipment is greater here than in the other classes of manufacture.

Engineering Manufacture. Engineering manufacture includes the building of special purpose machinery, specially designed equipment, bridges, and other large construction according to engineering specifications.

This type of manufacture has many of the characteristics of the made-to-order class, and all of those of the jobbing group. The engineering specifications, blue prints, patterns, tools, and models are of first importance in production planning.

Materials and the work in process should be controlled to such an extent that no delays will occur when assembling.

Construction and Building. While construction and building can scarcely be called manufacturing, it is included here, because it has many of the same problems and characteristics as engineering manufacture and therefore production control can be advantageously applied.

Production planning is concerned with engineering specifications and their completion within a predetermined time. The preparation of necessary equipment, labor forces and material is of equal importance but depends upon the completion of the engineering specifications.

Standing-order Manufacture. Standing-order manufacture may be any one of the other classes of manufacture, and differs only in that the sales problem is partly solved for some time to come.

The type of production control will depend upon which class of manufacture is involved. In addition, particular attention should be given to the customer's demands, both present and future. Raw material and inventories should conform to these requirements.

Warehousing and Shipping. While warehousing and shipping is not manufacturing, many of the factors of production control apply.

Production control will concern itself principally with inventories and office routine. The method of handling orders should be carefully planned as

time may be of great importance. The handling of merchandise through the warehouse into the car or truck and the routing to the consumer are of equal importance.

The Small Shop. From what has gone before, it may have been inferred that only the large plant and large shop devoted to mass production can be placed under production control. Just as there are misconceptions about the kind of industries and type of functions which can be covered, so are there also misconceptions about the size of shops which should be controlled. The statement is so often heard, "That's all right for a big plant, but this one is too small."

It should be pointed out that, no matter how small the business is, if it is big enough to operate as a business at all, it is big enough to use and respond to production control. It will require some selling, some bookkeeping, some purchasing, some superintendence and there is certainly no reason to believe that it does not also require some planning and control.

It must not be understood that this means the same amount of detail or that the plan needs to be in any sense elaborate. Just as every application of production control must be made to fit the difference in the types of businesses, so must it also be made to fit the difference in size.

When we analyze a small shop we find that it has the same problems, nearly all of the same elements and usually just as many different opportunities for losses and waste as the larger one of the same type. The first consideration should be to eliminate those which have become so small that they are negligible. This will at once simplify the whole matter. What will be left are the real essentials and these should and can be brought under simple control.

Usually these will include some kind of simple order system, an analysis of operations, and a production rate, which in the small shop is so often neglected. It is possible to use the time estimates which were made as a basis for price quotations, for the production rate, as has been recommended in the foregoing. With orders entered, operations analyzed and production rates established, a simple schedule assigning orders or operations to men and machines, can be made up and should by all means be followed. With this available the foreman can usually assign or dispatch the jobs; and finally a periodical check of actual performance throughout the day, against the schedule is an excellent follow-up not only of the orders, but also of the effectiveness of labor. With the orders available and the regular schedule made up, materials needed can be ascertained and purchased in time. Here material control is often especially important because with fewer orders in the shop, delays for materials assume large proportions, in many cases necessitating a shut down and therefore loss of a considerable part of the plant capacity.

Production control in the small shop does not presuppose a large staff of clerks. Eliminating the negligible elements and concentrating upon the main essentials only, usually the time, or even part time, of one person will suffice. An office man may combine this with other work, or a shop foreman may do all of it himself. However, if it is done, it should be definitely organized and carried out.

It should not be assumed that the system for the small shop need be elaborate or complicated. A simple routine can be developed. Many

forms needed in the larger plant are unnecessary here. A single form can, in many cases, be made to do multiple duty, and the few forms that are used can be quite simple.

Summary of Possible Results. Throughout this discussion, the various results which can and should be secured from proper production control have been mentioned. It might be interesting to summarize them now in a single list. They are as follows:

1. Reducing material inventories, and thus the cost of maintaining stocks, which is seldom less than 20 per cent of the investment and often as much as 25 per cent.
2. Balancing finished goods inventories, which helps to accomplish No. 1 and also facilitates customer service.
3. Holding down work in process, which helps to accomplish No. 1 and also aids in using plant facilities to fullest possible capacities.
4. Increasing material turnover, which also helps to reduce the cost of maintaining material inventories and improves the financial position of the company.
5. Using plant space, equipment and facilities to fullest possible capacity, which holds down capital investment and secures greater earnings on that already invested.
6. Holding down investment in tools, jigs, and fixtures, which does the same as No. 5.
7. Assisting labor in attaining and maintaining production standard rates, which may run from 10 per cent to as much as 50 per cent saving in labor costs.
8. Helping to meet standard costs, which is also a real dollar saving.
9. Aiding in the reduction of overhead, another dollar saving.
10. Meeting delivery promises.
11. Helping to maintain sales quotas.
12. Preventing overproduction.
13. Helping in executive control.
14. Aiding factory supervision.
15. Assisting labor towards greater earnings.

These are the fifteen major results which should be and can be secured through production control. The first nine can be classified as direct, tangible, dollar returns. The remaining six in the group are indirect and intangible, but although they cannot be accurately measured nevertheless are known to have a monetary value.

CHAPTER VIII

MOTION STUDY¹

BY LILLIAN M. GILBRETH, *President, Gilbreth, Inc.*

Motion study has sometimes been looked upon as a management technique, a method of measuring work methods by micromotion devices or cyclograph devices. As a matter of fact motion study is a philosophy of work, an attitude of mind, a method of stating, analysing, and solving work problems, as well as a technique of measurement.

As a philosophy, motion study is interested in looking for causes of effectiveness in work. It asks exactly what is to be done, who is the best person to do it, where should it be done, in what length of time, and by what method—the old *what, who, where, when, and how*. It thinks of man as the center of activity and as expressing himself in motions, aided by tools and machines, and using materials as a medium of expression. Production is the result of this expression. It can in a way be measured by the amount of product, but it is always measured also by the amount of skill it indicates and the satisfactions it arouses. There is a distinct change from the older idea that the product is of prime importance, and that the machine, tools and men are chosen with no other thought in mind than to make the most of the desired product of the prescribed quality at the least cost of materials, time and labor. The factors of the result are the same perhaps, *i.e.*, materials, machines, and men, but the emphasis is in the reverse order, *i.e.*, men, machines, materials. The philosophy of motion study says, "Study your man, determine what product he can best make, give him the working conditions, machines and materials that are best suited to him for the work, and you may expect success."

Motion Mindedness. As an attitude of mind, motion study looks at work as a combination of productive or efficient motions. The man who has this attitude becomes "motion minded." When he visualizes a piece of work he sees it in terms of the motions with which it should be done. He thinks of the worker as making these motions, and of the necessary modifications of what he regards as the ideal set of motions for doing the work, to suit the individual characteristics of the worker, physical, mental and emotional.

¹ EDITOR'S NOTE. The principles of motion study are discussed in this chapter with special reference to their application to the micromotion method of job study. The same principles are recognized as underlying effective use of stop watch methods. For a detailed description of their application to stop-watch technique see "Job Standardisation," by Charles N. Underwood and Charles W. Lytle, The Ronald Press Company, 1931.

The worker is tall; he is short; he has long arms, or legs; he is strong; he is weak. Every variation in physique affects his motion equipment. The same thing is true of variations in his mental make up. He is well educated or he is not. He has the requisite trade skills or he has not. He has been trained to use effective motions or he has not. So also, in the emotional field, he is excitable or calm; controlled or uncontrolled. There are countless other variations in all three fields that must be kept in mind in adapting the standard to his use. The motion-minded man has all these things in mind, but he visualizes and keeps clearly before him the "one best way" of doing the job, from the motion standpoint, and measures the necessary deviations constantly from the norm.

It is necessary to keep the motion study philosophy and attitude of mind before one, if one is to value its method of stating a problem and its technique properly. If these two are not carried through, with the philosophy and the attitude of mind motivating, the results can never be satisfactory. One can find the shortest motions of doing a piece of work, the motions least wasteful of energy, the quickest motions, etc. but he cannot find the *best* motions unless he remembers that they are to follow the standard or "one best way," given the best available worker, working conditions, materials, and tools, but always with allowance for individual skills and satisfactions.

The study of times is with us a by-product of motion study which uses the stop watch as one of its measuring devices. It records times as a part of its measurement technique. The old controversy between the stop-watch technique and the micromotion technique is so much a thing of the past that only students of management history are much interested in it today. The modern management man wants to know how he can most effectively discover and standardize the best work methods. We turn now to this.

Determining Need for Motion Study. The first step in making a motion study is to determine whether or not it needs to be made. "Is it necessary?" is always the thing to ask. Often it is not. In many cases a careful observation of the piece of work to be studied will show that it does not need to be done at all. Take for example a project to study the prepositioning of a subassembly, to be used in a final assembly. Consideration of the problem may bring to light the fact that the subassembly comes from another plant, perhaps another industry, and can perfectly well be packed and delivered to the plant where the assembly is to be done, so prepositioned that it can be assembled with the least number and most effective motions. This will do away with any necessity of the study in the assembly plant, and may mean practically no study in the plant where the subassembly has been done.

If the work suggested as worthy of study proves necessary, the next thing is to state the problem clearly and in detail, so that one can determine how much motion study is necessary and the time, effort and money that the study justifies. What does one expect the results of the study to be, and how reasonable are his expectations? What are the possible savings? The probable savings? The assured savings? What will these cost, in time of investigation, in cost of materials, tools, and skilled and unskilled

labor? Will there be by-products as well as products, and what will these be worth? What is the expected lag between the time of starting the work, of discovering the best method, of teaching it to a selected operator? Should all who do the work use the method? What about setting rates? What about maintenance?

If the assured savings are assured, the probable savings appreciable, the possible savings large, the conditions for a study are ideal. Considerable cost is justified if there will be by-products as well as products and if the time lag between the study and the returns is short.

How can one predict all these things? The expert motion-study analyst can do a surprising job. The beginner naturally cannot, but there are certain things that will help him. He can examine the work to find out if he can see a better way to do it, just by careful scrutiny. Often the fresh eye will discover savings that the accustomed eye has missed. It is well to develop ways of giving the jaded accustomed eye a new slant, by looking at the work from another angle, thinking of it as consisting of *motions* and not of *making something*. Even the handicapped non-visualizer can do this in time.

Much can be learned by asking questions. How many workers are to do the work? Will a few do it for a long time? Will many do it if only for a short time? Is it a job so nearly like other assured probable or possible jobs that results of studying it can readily be transferred to other jobs? An expert can also discover for himself or find out if it has elements of motions that are also elements of jobs which may seem unlike as wholes but which have identical elements. The *life* of the job must be known before one can tell what it justifies in study. Without this knowledge, many a poor beginner has undertaken a prolonged investigation and done a fine job at it, only to find out too late that "the model is to be changed" or that "this type is to be discontinued."

Characteristics of Motion-study Analyst. The above may indicate the type of person who should be chosen for motion-study work—a close observer, preferably a visualizer, one who has aptitudes for both analysis and synthesis, and who can see likenesses as well as differences; a careful painstaking worker who is intellectually honest, who knows how to measure and likes to do it—in other words a scientist. He should be one who likes teaching and is able and glad to learn the techniques; one who has a constructive imagination and is not afraid to use it. A stop-watch analyst may qualify if he is not set in his ways. There is nothing in his training that is a handicap and much that is a help, if he is open minded and can easily become motion minded.

This type, the open minded, find it easy to ask of any job, "What are the results that are to be accomplished? How are they being accomplished? Is there any simpler way of using the present method? Can I think of any way in which the same thing is being accomplished in any other field?" We shall have occasion to note later how analysis of the micromotion film and study of therbligs and simocharts teaches a man to transfer methods from widely diversified fields. The best motion study analysts often preclude the need for extended study of a piece of work by thinking of an entirely new way to do it, suggested by a likeness before unobserved, and making

such great savings that no further motion study is called for, at least at that time.

All Jobs Profit by Motion Study. There is practically no job that cannot profit by a detailed motion study, if one must not consider immediate and appreciable money savings. Often motion study at frequent intervals is warranted, because of improvement in materials, tools, or the type of men available for the work. We are considering all through this chapter the advisable procedure for production work, under typical industrial conditions where assured prompt and appreciable savings are considered an indispensable result of motion study. As a matter of fact, the training to be motion minded of everyone who takes part in or even sees a detailed motion study is always worth much more than the cost. So are the suggestions for improvement of the place where the work is done, and many other results. But this is not the place to discuss these.

The Motion-study Technique

Let us suppose that the decision has been made to undertake the motion study. What next? In many cases a record of the present practise of doing the work is necessary. This is especially the case where there is a likelihood of the motion study analyst being told, when he has completed his work and recommended a new method, that it is "practically what we have always done." If there is no danger of this, and obvious changes for the better are apparent, it is as well to make these before starting to make records. In any case, everyone who is to be concerned in the study should be told *why* it is to be made, *what* is to be done, and *what* the expected results are. If it is an early study in an organization, as many people as possible should be interested in it, and there is no surer way to arouse interest than to ask for cooperation; best of all, to insure that as many people as possible take part in making the study. It is well worth much time and effort in the planning to make this possible. It may cost more money if people are allowed to help, to watch what is going on, to make part of the records or to have what they do recorded, but this is certainly money well spent.

The Process Chart. The first aid in recording is the process chart. The work place may be photographed, or a drawing or diagram may be made, to accompany the process chart. On it the various steps through which the work passes should be carefully set down. This will probably mean studying all the workers in a process in order to be sure to set down any variation in the method used appreciable enough to be noted without a camera. The process chart technique is constantly developing, until now one is able to solve many motion-study problems through using only this, and none of the other measuring devices available. It often suggests desirable changes which result in such savings that it is advisable to turn to other problems and leave great refinements of study to some later time. Or if models change rapidly and there is a constant stream of small dissimilar orders the process chart may handle motion-study work very well, so long as new men do not have to be trained for the work. Training demands the use of all the techniques and the micro-motion film and cyclograph are indispensable. The process chart technique

makes it possible to break down the process into details, and an adequate set of symbols are available and act as thought detonators of things to observe

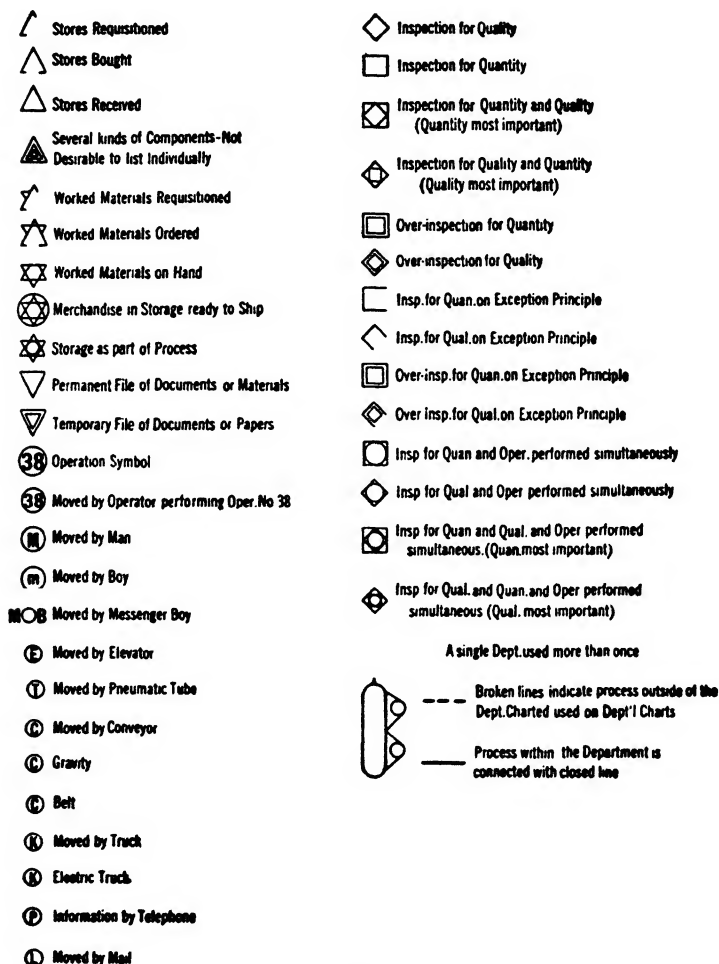


FIG. 1.—Process chart symbols.

(Fig. 1). But many organizations find it possible to accomplish what they need using only four of the symbols, that is recording only the *operation*, indicated by a large circle; *transportation*, or work moved by man, conveyo

truck, etc., indicated by a small circle; *permanent storage*, indicated by an equilateral triangle, with one of the angles down; and *temporary storage*, with a similar triangle, with another like it inside it. The two first symbols indicate among other things, *action* and the last two *delay* (Fig. 2).

The distance travelled may be indicated on the side of the chart. The chart may be elaborated to show *who* does the work as well as *what* is done. The work of the right hand and of the left hand may be charted side by side, to show what moves are made and when (in relation to the moves of the other hand), etc. So many new developments of the process chart are taking place at this time that it is only possible to illustrate by a long series of examples, which cover men, materials, machines, and motions. The motion-study analyst will usually use therblig symbols, which will be explained later in this article, on his process chart to keep the elements of the motions and possible economies in mind.

The process chart does not attempt to indicate time, though this might be done by adding stop watch or micromotion readings. But the recording of time is not their purpose. Motion study, since its beginning, has insisted that if the paths and speeds of motions were right, the times would be right also.

As for the field of application of process charts this is practically limitless. Not only the work methods of production, selling, office work, sports, etc., have been recorded but also the process of making a motion study and of attacking any type of problem. At present process charts are not only taking the place of long transcriptions of procedure, but such transcriptions already in use, many of them for years, are being put into process chart form, to save space and to assist in visualization. The charts enable one to see the details, in themselves, in relation to each other and to the whole.

When the process chart has been made, it is possible to determine what degree of detail study is necessary, and in many cases one circle of the chart will be broken down into a more extended study and this again expanded into a still more extended study.

Also possibility process charts may be made, as one thinks of improvements, and the saving in distance of transportation of elimination or delay indicated. Often it is possible from these to calculate the expense of the changes suggested and to decide whether these changes shall be made, without use of any other technique. Such changes may even lead to the design of a machine to do the work.

The Micromotion Method. It is when exact motions and the times of these are needed, or when the study of elements of motions would be profitable

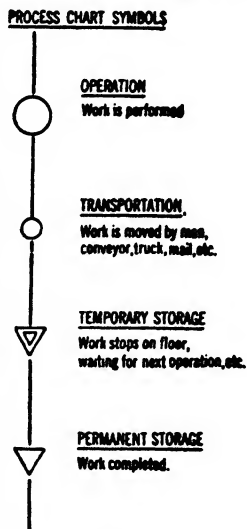


FIG. 2.

that the micromotion method is used as a supplement to the process chart method of making motion studies. A study of the process chart makes apparent where a supplementary study would be of use. Very much the same standards of determining this are used as in determining where a process chart would be valuable. What is the life of the job? How many people are to do it, and what are the likenesses to other jobs? Added to this is the need to make minute savings, to have data as to time and motion paths, and to analyze these into therbligs or elements of motion cycles.

Just as the making of process charts has a highly educative value so has the making of a micromotion film. The procedure of making such a film is even more interesting to the participants. There was in the early days some question as to the cost, and often a hesitation to invest money in the equipment and the film, as well as to invest the necessary time for training and the time used in making the study. The stop watch was supposed to be by far the cheaper method. It may be well to discuss the relative advantages of the stop-watch method and the micromotion method here.

Micromotion or Stop Watch. Where times are needed at once, and it is better to sacrifice accuracy rather than to wait to take, develop and analyze a film, the stop watch is indicated. All motion-study analysts use a stop watch and become expert enough to do a rush job. Where the job is a short time job involving few people, has not many elements of motions which will be directly serviceable, and there are no micromotion records of similar jobs to use for estimating times and no motion-study trained analysts to help with the times, the stop watch is indicated. Where there is no need of a record of motions but only such a record of the work method as can be put into words the stop watch is allowable. But if a record of the motions is needed, if exact times are needed, if a simultaneous record of the motions and the times is needed, if a record that will be more accurate than the report of any number of pairs of trained eyes, always complete, easily available, readily understood, and comparable with other similar records is needed, the micromotion method should be used.

As for the cost, in these days no one needs to be told that motion picture cameras are available, cheap, adequate for the demands made upon them and undemanding of expertness in their users; or that film is cheap and the development of the films, the making of positives and replicas, handled entirely by the makers of the film. The pioneers had to search for, adapt, or design their cameras to be adequate recording devices for micromotion needs. Today any one can take a motion picture film and anyone can learn to take a micromotion film.

Who Should Be Filmed. Micromotion technique means first of all the selection of what is to be filmed. This we have discussed. Next it means selecting *who* is to be filmed. It is best to decide at once that every one doing the work will be filmed, though in most cases only a few feet of film need be taken, and this not for the value of the record as much as to get the cooperation in the study of every one on the job.

The best workers in the group should be selected for detailed filming. Motion study never tries to locate the "average man" or the "median worker" at this stage of the study. It is interested in recording the motions

of every worker who does excellent work, in order to be sure that every good motion cycle, no matter who makes it, is recorded on the film. The good workers are found by observation, by study of any available work records, by consulting the management and the workers themselves, and by adding to the group the "laziest" ones, who often have developed efficient methods of few motions and no unnecessary fatigue, and make high production with little exertion. One learns to see that efficient workers are likely to arrange their work places so that they get most done; use few head motions; follow more or less unconsciously the laws of motion economy and show indications of skills and satisfactions. For example, the eye of the skilled worker is always ahead of his hand in the motion cycle.

Choice of Film. It was customary in former days to use the large film, because of the sharpness of the record. Now the 16 mm. film is so good, and its use simplifies so much the weight, bulkiness and cost of the equipment that it is used in most cases for this work. The fact that one need not provide for developing, printing, etc., is also of course an excellent reason for its use.

The Microchronometer. A motion-study film is not a micromotion study without the use in the picture, of the fast-moving timepiece, or microchronometer. This records time to the one two-thousandth of a minute, and its use makes it possible to record not only motion cycles and their times but the therbligs, or elements of motion cycles and their times. As yet microchronometers are not on the market, because it is felt that such a timepiece without the training to use it for micromotion study, is worse than useless. It would only tempt its user to feel that he has a real micro-motion study, which he could not have without the technique and knowledge to make the film useful when completed.

Preparation for Filming. As with any photograph, the work place and worker must be adequately lighted; the work process within the scope of the lens, the danger of glare, etc., eliminated. The clock must be so placed as to be in the field of the picture, yet not interfere with the worker's motions or distract his attention. He must have the whole procedure explained to him, so that he will not be startled or confused, or otherwise prevented from doing his best work, and he must be interested in what is going on, the attempt to have his finest possibilities recorded.

All this is much simpler than it used to be. Lighting is no longer a serious problem, since portable, inexpensive, efficient globes, attachable to the ordinary electric outlets are available. No more is there need for flash lights or startling arc lamps, nor need to offer eye shades to the apprehensive worker, nor danger of the lights getting temperamental or the men who are handling them nervous, at the most inopportune moment. Where feasible the worker is placed against a cross-sectioned background; the work place is cross-sectioned, so is the floor; everything possible is done to put indications of space in the photographic record. It is scarcely advisable to describe here the methods and devices that make it possible to get a third dimension in the record. It is enough to say that any demands for refinements can be met by the established technique. As a matter of fact production needs demand very little besides a good motion picture with the fast moving clock in the picture, such as can be made by a motion-minded, motion-trained

analyst after a short intensive course of training. The refinements are needed in the research laboratory, and their use will result ultimately in an accumulation of data that will make the taking of films unnecessary for jobs having elements of motions already studied and recorded. Any one interested can master methods and devices and include in his records information which may not be needed at the time, but which costs little effort to acquire and which may be of great use to research later on.

Attitude of Workers. The worker should understand not only *why* the film is taken but also that he is supposed to do his best work. If he can also understand exactly *how* the mechanisms record what he is doing, before the actual filming is done, he will be able to concentrate better. A little time spent on explaining the mechanism of the apparatus will pay well for itself. Women workers usually object to being filmed without a chance to "clean up," and will do a better job if given an opportunity to prepare for the camera. But one should be careful to explain that a motion-study film is primarily a photograph of a method, not of certain persons, and that the method cannot be recorded if the worker wears restricting, dangling, or unworkman-like clothes. No one wants to be conspicuous. This usually handles the situation.

There has been little or no objection to the timepiece. The worker is told that times are incidental and primarily to be used as aids for comparison and selection of therbligs. He knows that the purpose is to discover the one best way, or standard, not to secure a time and motion record to be prescribed with no allowances, group or individual. He is usually in the spirit of a contest, and anxious to beat not only the past record of others but his own.

How Much to Record. The amount of film to be used must be determined by the nature and value of the study; the number of people to be filmed; the success of the undertaking as it goes on, any new variations of method which may develop under recording conditions, etc. Film is cheap; it is much better to use too much than too little. The scope of the process to be filmed should have been determined before the filming was started. The approximate amount of film that will be needed, if the operation is to be recorded fully, can be determined before actually starting to record, by use of a stop watch or an ordinary watch or clock. In many cases one will find, while doing this observing, that some preceding operation is essential to knowing the "get ready" and some succeeding, for the "clean up" of the "do it" which one is studying, and these should be included in the filming. On the other hand, often one finds that not all of the process chosen is significant enough to require filming. This means that one can stop the camera at certain parts, allowing the clock to go on, and start it again when there is need of a record. There is danger that one will stop too soon or start too late to record needed motion cycles, and if one is inexperienced, it is far better to record too much than too little. One should remember the footage used by the commercial motion-picture studios to make a picture and should not grudge a little extra film. Above all one should not neglect to film everyone, no matter how poor the method, who expresses a desire to be filmed. One should include a few feet of the work room, with the group being studied at

work and the motion-study group at their work, and end the film with a few feet showing the combined groups filing before the camera. This should insure that every one will have a chance to see himself in the picture. It may not be necessary to do this after the taking of micromotion films has become a part of shop and laboratory routine, but it is necessary during any study where the group concerned is unacquainted with micromotion study. Sometimes one gets information from unexpected sources. The less efficient workers occasionally have motion cycles or therbligs that are better than those of the best workers. Their motions if not good may be used as a base line from which to draw an efficiency curve. And material not of use to derive the best method is sometimes useful in teaching, or showing the wrong and the right way, or the much sought after "before and after" illustrations.

When the film has been developed and is available it should be projected for the recording group, and studied as a piece of filming and as a micromotion record. Any defects of film, focus, lighting, etc., should be noted. The film should then be shown to the group who were recorded, and their reactions to it noted. It is often possible to get valuable suggestions as to betterment of method from a discussion at this point.

The Simo Chart. Every frame of the film that contains data that might be valuable in determining the standard method of doing the work should be studied next and the data transferred to a simultaneous motion cycle chart.

The "simo chart" is a record of the motions and times recorded on the film. It is made on standard cross-sectioned paper, a large roll being used, which is placed in a specially designed desk, which permits an adequate working area to be in place before the analyst, while he looks at the film through the small aperture where it is illuminated and magnified. His row of colored pencils for recording the therbligs is above the paper, each with its therblig symbol over it, all in the usual sequence and positioned for ease of use.

At the top of the chart is pasted the legend and the printed strip listing the parts of the body, left arm, right arm, etc., each with subdivisions making it possible to record down to the finest of finger motions, eye motions, etc. The times are recorded down the left side of the chart, as the work progresses. Every worker who has been recorded has his motions analysed upon a separate chart, the identical technique being used on each. If, for example, the hand motions are broken down into finger motions in one case, they should be in all cases.

Making a simo chart calls for the greatest care and accuracy, and in many cases for judgment and experience. If one is the least uncertain of the therblig, or cannot decide where one therblig ends and another begins, a question mark should be added to the chart at that point in order that one can return to it for reexamination or submit it to a group for expert attention. Often the picture of some later therblig of the same kind or some other cycle will clear up the matter. Then one can return and better the record. It is not necessary and often is not advisable to make a complete or beautiful chart when taking off data on the preliminary chart. This can be done later, when one has finished the first draft, or assigned it to a specialist in chart

making. An added advantage is that one is more reconciled to scribbling on the right side of the chart any suggestions that one receives from the film as to causes of delays or of inefficiency, or any suggestions as to betterments.


















SYMBOL	NAME OF SYMBOL	SYMBOL COLOR	NAME OF COLOR	NAME AND NUMBER OF PENCIL
	SEARCH		BLACK	DIXON BLACK #331
	FIND		GRAY	GRAY #352½
	SELECT		LIGHT GRAY	#352½ APPLIED LIGHTLY
	GRASP		LAKE RED	LAKE RED #321½
	TRANSPORT LOADED		GREEN	GREEN #354
	POSITION		BLUE	BLUE #350
	ASSEMBLE		VIOLET	VIOLET #323
	USE		PURPLE	PURPLE #323½
	DISASSEMBLE		LIGHT VIOLET	VIOLET #323 APPLIED LIGHTLY
	INSPECT		BURNT OCHRE	BURNT OCHRE. #335½
	PRE POSITION		SKY BLUE	SKY BLUE #320
	RELEASE LOAD		CARMINE RED	CARMINE RED #321
	TRANSPORT EMPTY		OLIVE GREEN	OLIVE GREEN #325
	REST FOR OVERCOMING FATIGUE		ORANGE	RUBEN'S CRAYOLA ORANGE DIXON ORANGE #324
	UNAVOIDABLE DELAY		YELLOW OCHRE	YELLOW OCHRE #324½
	AVOIDABLE DELAY		LEMON YELLOW	LEMON YELLOW #353½
	PLAN		BROWN	BROWN #343

FIG. 3.—Standard colors for therbligs.

It is difficult to "spoil" a beautiful chart by adding such notes, yet they are often the most valuable part of it, from the standpoint of bettering existing methods. We have seen a motion-study analyst stop charting and run out

into the plant, to make a change in a work place or in routing that was the key to the saving for which the study was primarily made.

The making of simo charts is by far the most protracted and exacting work so far described. Every novice is surprised at the footage of charts from a film, especially if it is a clear record. Many a good-looking picture is not a good record. The clock is obscured, or some part of the body is in shadow and it is not possible to record the therbligs.

The Therbligs. These therbligs should perhaps be listed here. There are seventeen so far. If there are more they will come by dividing the ones now discovered or by finding that the sum of the seventeen does not make up a complete motion cycle. This latter was the case with the discovery of the therblig "plan," the last to be listed. The operation is divided into motion cycles, as has been said. The motion cycle is not divided into motions as it is almost always difficult and often impossible to find the beginning or the end of a motion. The motion cycle is divided into elements of the cycle called therbligs, a coined word, because no adequate word was available. These are (see Fig. 3):

1. Search.
2. Find.
3. Select.
4. Grasp.
5. Transport loaded.
6. Position.
7. Assemble.
8. Use.
9. Disassemble.
10. Inspect.
11. Preposition.
12. Release Load.
13. Transport empty.
14. Rest for overcoming fatigue.
15. Unavoidable delay.
16. Avoidable delay.
17. Plan.

Certain of these therbligs are much easier to identify and separate from the rest than are others. For example, "grasp" is usually easy to identify and to bound, while "search" "find," and "select" are often so blended as to be difficult or impossible to separate; in which case all three symbols may be used.

If teaching is the prime purpose of the study and immediate results are desirable from the savings standpoint, the person from whose work the chart is made should be shown the results as soon as possible. In any case his comments, as soon as he understands the technique are almost certain to be of value. The film should always be ready to show with the chart, so that any point not clear or discussable may be illustrated by the original film record.

A simo chart should be prepared from the film of each worker recorded. When these are completed they are hung side by side, so that one can compare

the therbligs. Every slightest deviation in the therblig and in the time of the therblig is noted, and a tentative standard method is built up by synthesizing the best therbligs from all the charts. It is very seldom the case that the derived method lies in the consecutive motion cycles of any one worker. Usually the synthesis consists of a therblig from one chart or a motion cycle, if it is specially efficient worker, then one from another. The completed chart contains the best practice of each of the group of workers studied combined into a work method.

The *standard method* must, as nearly as possible, use the *rules for motion economy and efficiency* which are as follows:

1. Both hands should preferably begin their therbligs simultaneously.
2. Both hands should preferably complete their therbligs at same instant.
3. Both hands should not be idle at same instant, except during rest periods.
4. Each of the seventeen subdivisions on various kinds of works has a proper range of elapsed time in which it should be performed. While this differs for different people, correct standard from which to deviate should be established.
5. Motions of arms should be in opposite and symmetrical directions, instead of in same direction, and made simultaneously.
6. Hesitation must be analyzed and studied, and its cause accounted for and, if possible, eliminated.
7. Shortest time demonstrated in one part of study should be used as a mark to attain, and reason for other times required in other parts should be known.
8. Number of therbligs required to do work should be counted for one best way is almost always sequence of fewest therbligs.
9. Best sequence of therbligs in any one kind of work is useful as suggesting best sequence of other kinds of work.
10. Every instance where delay occurs, suggests advisability of providing some optional work that will permit utilizing time of delay if so desired, or making fatigue study of interval.
11. Variations of time required for any single therblig should be arrayed and causes recorded.
12. Lateness of various parts of anatomy as compared with other portions should be recorded.
13. Since fast motions cannot be made in same path as slow motions, learner will acquire desirable automaticity quickest if he works at motion speed of expert from beginning, regardless of quality of resulting work.
14. Lateness of anatomical members of expert should be observed most carefully. Where it is not possible to work from first at speed of expert, this lateness should be copied as closely as possible.
15. Rhythm is most important, and is largely a matter of time and not of distance, although making a motion covering same distance many times consecutively will affect rhythm to some extent.
16. Awkwardness, grace, ambidexterity, and bimanuability, are all greatly affected by time element, which affects also hesitation and decision and many other psychological variables.

The motion-study analyst has these laws in mind when making the synthesis, and is governed by them when making his choice of therbligs and therblig sequences.

Arrangement of the Work Place. All through the motion study he has had in mind three other things. The first is the *height of the working surface*, which will make work motions easier and less fatiguing. This height is calculated from the height of the elbow standing, when the arm is relaxed. The work surface should be of that height which will enable the worker to keep the arm in a restful relaxed position all through the work. A chair should be provided which keeps the elbow at the same relative height when the worker is seated, and should be provided with casters, so that the worker can reach for it with his foot, without needing to turn the head, and thus not be interrupted in his work.

The second thought that the motion-study analyst has in mind is that of the *circular work space*. If the worker extends his right arm forward to a normal reach and makes a sweep across the work place from left to right and right to left across his body he will have covered the most convenient zone for work with the right hand. In the same way, if the worker extends his left arm out and makes similar sweeps, he will have covered the most convenient work area for the left hand. The overlapping area in front of the body will be the most convenient area for two-handed work. (Fig. 4.)

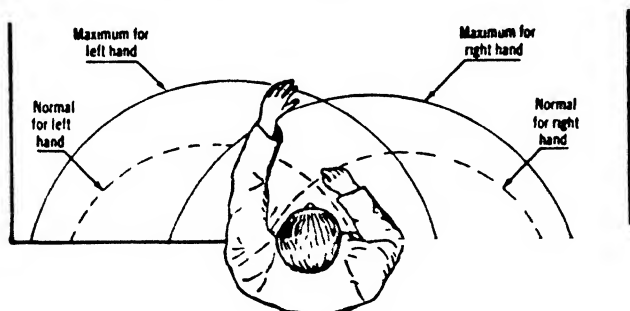


FIG. 4.

The third thought of the motion-study analyst is that it is efficient to *have things to be used by the worker in the two-handed work space*, if they are not in the way there, or so arranged that they will be most easily available at that place. This includes positioning of tools, materials, and handles of machines, and routing to and from the work place, everything that means motions conforming to the rules of effective work, all through the time that the work is going on.

Changing the Work Place. There is a variation of opinion as to when it is advisable to make the changes necessary to carry out these three principles of motion and fatigue economy. Sometimes it may seem advisable to make the indicated changes in the work place before making the process chart, sometimes before making the film. Usually it is evident that the best time to make them is when the simo chart is being studied to standardise the methods, because often a film suggests an entirely new set-up. It is

thinkable that this may necessitate making another film; usually not. Sometimes it is necessary to make jigs or fixtures; usually it is necessary to make or adapt bins. Often conveyors of one sort or another are indicated. These are designed always with the thought of making the most efficient motions possible, and easy, and least fatiguing.

Use of Micromotion Study. It is always advisable to keep the film in a form that corresponds to the charts. In some cases illustrative frames are printed from the film on paper and pasted to the simo chart, to assist in the visualization of what is being prescribed. Often paper strips and frames are prepared for record books and filing cards. These tend to motion economy in locating motion cycles or interesting therblig data. It may be advisable to reedit the film at this point making a special print for teaching, which contains only the efficient work elements.

The work of the micromotion-study analyst is not done until the best worker has been taught the motions of the standard method and is able to do the work by the prescribed method in the predicted time. When this has been done the data are handed over to the training department and to the task and rate setting departments for incorporation into standards to be used and taught. These techniques will not be described here. Motion study does not prescribe allowances to be made, nor the type of wages to be used. It confines itself to determining and teaching the method. The great advantage of using its data from which to calculate shop-work standards is that the allowances and deviations made are from an accurately derived norm. In case of mistakes or dissatisfaction, it is always possible to return to the norm and go on from there, correcting. Again, the film presents an accurate record not only of the method used but of the worker who used it. In permitting minute changes of method to compensate for individual weak points to utilize individual strong points, one can always compare the worker recorded with the one assigned to the work, and check on the necessity for such allowances.

The micromotion-study film is a wonderful training device. It helps the learner to visualize. It permits of repetition at the prescribed intervals for an efficient learning process. It can be accompanied by a lecture. It can serve as a guide for motor learning if the learner is told to follow the motions of the worker recorded with his own arms, hands, etc. It makes clear not only what is best, but why, illustrates paths and speeds of motions, simultaneous motions, etc. It is an always available, infinitely patient teacher.

The Cyclegraph. It is possible to project the film on a cross-sectioned background and trace with a pencil the path of a motion in two dimensions, and thus to supplement the film's inability to record a motion path so that the record remains after the frames that contain it have passed the shutter. The cyclegraph technique, the third technique of motion study to be described in this chapter, was invented to meet this need and to add the possibility of recording the motion path in three dimensions and in time.

The cyclegraph is made by attaching a minute electric light bulb to the hand, finger, or other moving part of the worker, and photographing, preferably with a stereoscopic camera, the path of the light as it moves through space. Through the introduction of a timed interrupter, it is possible to

make chronocyclegraphs which show the path of the motion, the time, the direction, the speed, and if several moving parts are to be recorded, also relative speed. The cyclegraph technique, highly developed to meet every need, has been neglected during the past few years but both need for and interest in it has been lately apparent, and it is being revived and adapted to the need. It has proved itself the outstanding device for recording skills and as the new studies in skills and satisfactions, as related to motions, are carried on, we may expect to see greater and greater use of the cyclegraph technique.

Aims and Results of Motion Study. Motion study, fatigue study, and skill study, from their beginnings recognized as closely related, are increasingly being felt as *one* problem. If production is to insist on the efficient expenditure of effort, plus skill, resulting in the desired product, plus satisfaction to the worker, motion study and its allied fatigue and skill studies are plainly indicated. Those who use them wisely will eliminate waste, both material waste and drudgery and fatigue, and will themselves find opportunities to exercise skills and enjoy satisfactions, in the procedure as well as in handling the results. Best of all will be the outcome to the workers, who invariably enjoy being studied and participating in the studies. Better motions, less fatigue, greater skills and satisfactions, these are the aims and the results of motion study, in its broadest interpretation, and unless these are enjoyed by the workers we shall not have succeeded in doing our job.

CHAPTER IX

INCENTIVES AND SUPPLEMENTARY WAGE PAYMENTS

INCENTIVE PLANS FOR DIRECT AND INDIRECT LABOR

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Need for Incentives. After the amount of time that should be consumed in performing a given task is determined, either by time study, motion study, or estimate based on past experience, the next problem that arises is the method of inducing employees to exert the effort required to accomplish the work within a period equal to or less than the time established. The fact that an incentive is needed to secure the desired effort was recognized by early students of man's behavior. Darwin, for instance, observed that men differ much less in their mental abilities than in their zeal and determination to make the most of themselves, and later William James concluded that all moderately healthy men who live on the lower planes of activity can greatly enlarge their accomplishments by an act of will; by tapping hidden reservoirs of energy and putting them to work. Similar observations are made constantly by production executives who have the opportunity of comparing employees' efforts before and after incentives are applied.

Kinds of Incentives. To stimulate the desired response, we may appeal to one or several of the forces that regulate man's behavior. The desire for material gain, fear, pride, rivalry, and loyalty can be aroused, each by different appeals, and in each case the response of the worker may be affected to a very marked degree. Whatever medium management may employ to arouse these mainsprings directing human action is, in the wider sense of the term, an incentive. The desire for material gain, for example, may be stimulated by wage payments in excess of those paid to the worker on a time wage, prizes, stock bonuses, wage increase, or promotions, while fear may be aroused by a second group made up of penalties, lower wages, demotion, and separation. This second group of incentives may be regarded as negative appeals to the acquisitive tendencies and even though directly opposite in character to positive appeals, classified as financial incentives.

In our consideration of financial incentives we are interested, therefore, in any effort of management to influence the response of the worker by systematic or arbitrary adjustments in total earnings. The relationship between response and amount of earnings may be very direct as it is in the case of piece work and incentive wage plans or the time lapse between cause and effect may be of considerable duration resulting in the more indirect relation-

ship usually existing in annual bonuses, increases in time rates or promotions where the response may not affect earnings until six months or a year or more has elapsed. To be a truly financial incentive the adjustments in earnings should be systematically prearranged and directly dependent upon the response of the operator or group to which he belongs. Wherever possible, wage plans used by modern management are based on the premise that the maximum continued response of the employee can be secured by combining forms of direct and indirect financial incentives with those that are non-financial and appeal only to his loyalty, rivalry, pride, or sense of superiority.

Purposes of Incentives. In attempting to describe more definitely what is meant by the response of the operator we can also answer the question, "What are the different purposes for which incentives are used." Ordinarily, in thinking of response, the first element that occurs to us is the quantity produced. That, in actual practice, however, means number of units completed that are satisfactory in respect to quality, so the most important elements in response are usually accepted as being both quantity and quality. Most of the incentives found in industry are intended to increase the effort of the worker in these two directions, the majority being based primarily on quantity with a requirement that quality be satisfactory before the unit produced is counted as complete. There may be a gamut between good and bad divided into several quality grades making it desirable to establish a distinct incentive for the operators to concentrate the quantity produced in the highest quality grades. In this case, separate quality incentives can be supplementary to the quantity incentive. Other elements in employee response often considered sufficiently important to warrant some form of financial incentive are avoidance of waste in use of materials, attendance, punctuality, regard for safety, suggestions for improvements, and reduction of normal learning period. Any one of these factors may be subjected to some form of measurement which will enable management to set up systematic financial incentives in order to stimulate a more satisfactory degree of response from labor.

Measuring Response. The response of the directly productive operator has been measured with the least difficulty and it is in this field, therefore, that financial incentives in the form of wages are the most common. This is especially true in industries manufacturing standardized products on a large quantity basis. Where labor is highly specialized and motions largely repetitive, the problem of establishing an index or gauge which will measure response accurately is comparatively simple. Take for example the operator drilling the same size hole in identical pieces of steel, his output can be expressed by an index or number which is the sum of all the holes drilled. The number of holes that should be drilled within a given period of time can be established as a task and as long as we maintain all of the factors affecting the speed of his output in the same condition, we can place this task before him as the degree of response that he should attain. Management may then establish some form of wage plan in which remuneration is dependent to some extent or entirely on the measure of attainment.

Measuring Response Where Conditions Are Unstandardized. Difficulties arise, however, even in establishing a reliable index of response for all pro-

ductive operators, especially when the units of work in process are not standardized or there exists a variation in factors which affect very seriously the rate of production. The material on which labor is being applied may not run uniform, changes in temperature or humidity may affect progress, or management may be deficient in maintenance of flow of materials and in repair and set-up of machinery and other equipment used in performing the work. Variations of this kind are beyond the control of the operator, making it more difficult to arrive at an index of response which correctly gauges his effort. In spite of these obstacles wage incentives have been established in all kinds of industries and for all classes of productive workers, both skilled and unskilled. One large public-utility company in the Middle West measures output as a basis of wage payment to car-shop employees, construction crews, and even linemen.

Variety of Wage Plans. The wide application of wage incentives in all types of industries resulted in many modifications and additions to the original incentive plan of paying workers an agreed-upon amount for each unit produced, a method of payment that has been in existence longer than our present industrial system and still one of the most widely and most effectively used. Beginning with guarantees to piece rate operators that they would receive at least a given amount for an hour or day, the modification process has gone on until it is almost impossible to determine how many different wage-payment plans have been developed. The writer is familiar with one attempt that was made to classify the different plans in which a count of 200 was reached. Obviously many of these plans differed from others by only a few very minor details, and yet many of them have a distinct label. No wonder that the average production executive gives up in despair when plans are referred to by name only.

Limits of Variations in Plans. Methods of wage payment are limited on one side by a fixed time rate that remains constant regardless of the volume of production and on the other side, by forms of piece work which provide an increasing payment per unit, for all units produced, as production within a given period of time goes up. The high multiple piece rate is illustrated by a payment to the operator of 3 cents per piece when twenty-five units are produced in an hour, $3\frac{1}{2}$ cents per piece if thirty are completed in the same period and perhaps 4 cents when the rate of output reaches thirty-five. The changes in the amount paid per unit may be gradual with an intermediate rate between $3\frac{1}{2}$ and 4 cents, continuing with the above illustration, for each additional unit produced as production goes from thirty to thirty-five or the change in the amount paid per piece may take place in a single step, in which case the $3\frac{1}{2}$ cent-rate would continue in effect for the thirtieth up to and including the thirty-fourth unit. These steps or abrupt changes in rate per piece are found in many different plans including the Taylor differential piece rate and its modifications which came from Gantt and Merriek.¹

¹ The charts presented on the following pages are included for the benefit of those interested in the mathematical structure of the ten distinct forms of wage plans. They are also very helpful in understanding the classification of wage plans which follows.

Symbols used in the charts are:

E = earning in dollars.

Details of Wage Plans. Between the boundaries of fixed hourly or daily wages and high piece-rate plans there exists a large variety of curves and straight lines representing the mathematical bases of wage plans designed to meet all kinds of conditions. Often the claim to distinction is not the structure of the wage incentive but the accompanying records and graphic reports that are basically non-financial in their appeal, or tools that stimulate management to provide the operator with the cooperation and facilities that make a larger production possible.

Other plans are characterized by methods of measuring production in terms of output per minute instead of hour. All of these supplementary features are designed to make a more potent and conscious appeal to the employee and frequently they are very effective but they can be disregarded when the basic structures of incentive wage plans are being compared because they are not inherently part of any one plan and do not alter the earning arrangement.

Location of Task. Among the wage forms which guarantee a fixed time rate to the operator and then pay a supplementary wage based on the relationship between actual response and that established as the standard or task, we find some plans that pay no extra wage until the standard response has been reached while others start paying additional amounts at 62½, 66⅔, 70, and 75 per cent of task. This variation is due to a difference in the concept of what constitutes task. Some believe that the requirements should be set at a point that can be reached and exceeded by the normal worker, another group set standards on the assumption that 100 per cent should be attained by the most capable operators only, and with the introduction of micromotion study, a more solid foundation appears for a third group who regard the standard as an attainment of perfection never completely realized by any operator. Standards of the last type are rarely used. Obviously the incentive wage plan established and the attitude toward task are closely related for the more nearly task approaches the ideal response the more essential it becomes that our extra payments start at a point below task. The actual results of starting payment at 100 per cent and setting a high task would be practically no incentive. While the determination of standard response is a research problem, it should be based on a clearly defined policy of what constitutes task. If there is no common understanding of

N_p = number of pieces produced.

R_p = rate per piece in dollars.

R_h = rate per hour in dollars.

R_m = rate for machine in dollars.

H_d = hours per full day.

R_t = rate per time unit such as week, month, or year, in dollars.

H_a = hours actual.

H_s = hours standard for any given N_p .

B = bonus in percent of base-time wages.

The following charts are reproduced from Charles W. Lytle's "Wage Incentives for Direct Labor," *Mechanical Engineering*, p. 495, July, 1929.

Among the books on this subject, "Wage Incentive Methods" by Charles W. Lytle. The Ronald Press Company, 1929, is a very complete unbiased analysis of twenty-five widely used plans.

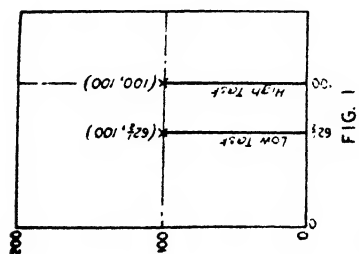


FIG. 1

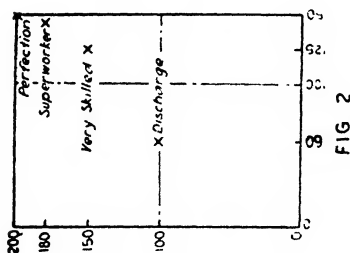


FIG. 2

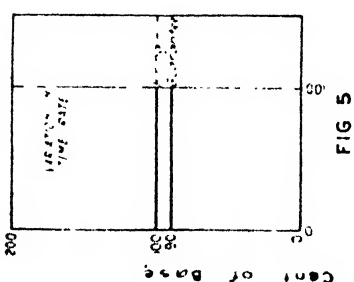


FIG. 5

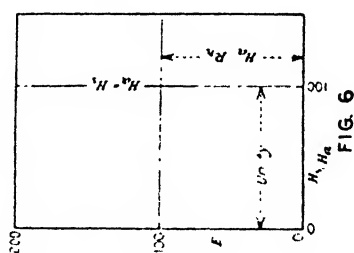


FIG. 6

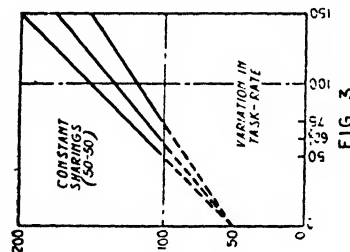


FIG. 3

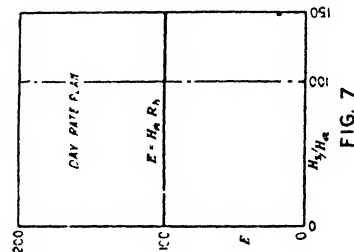


FIG. 7

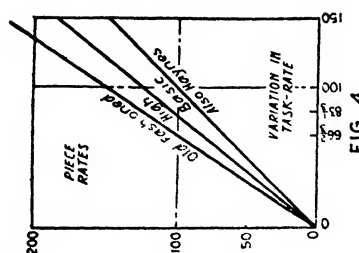


FIG. 4

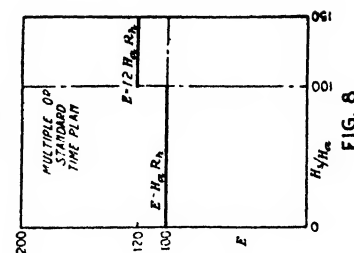
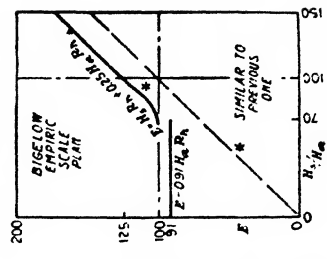
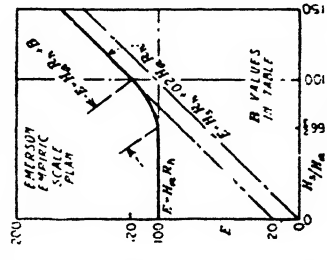
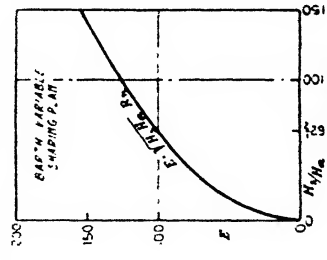
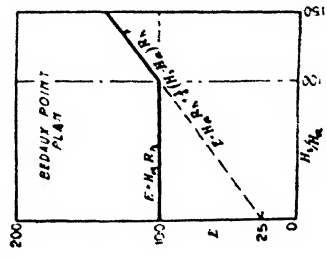
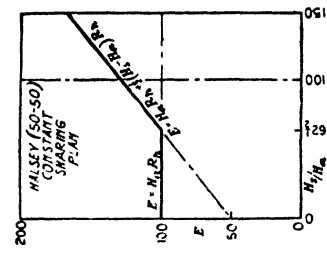
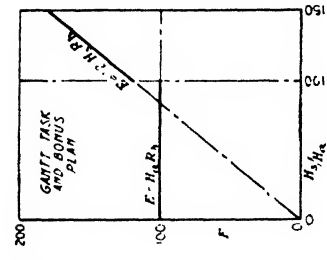
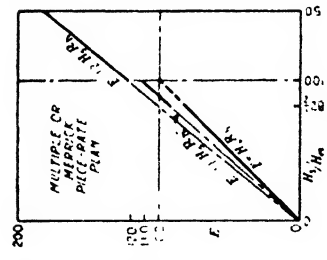
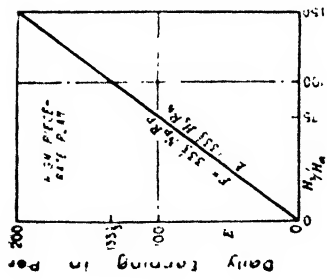


FIG. 8



this concept among members of the shop methods department, we may find that the determination of task has taken on an individual administrative aspect and the setting of tasks has become a process of allowing the operator to make a certain estimated amount. The result is different types of tasks set up in various departments having the same wage plan and a consequent inequality in the earnings of workers in the same class.

Straight Time-payment Plans. Although management has a large variety of wage plans from which to select, it is possible to reduce this assortment to four basic earning patterns. First is the fixed hourly, daily, or weekly wage which remains the same regardless of fluctuations in production. Here it is apparent that all gains or losses resulting from changes in the worker's response accrue to the employer and there is little financial incentive for improvement. If no well developed non-financial incentives exist where this form of payment is followed, response is practically certain to be 60 per cent or less of the employee's actual capacity. This condition is changed completely with few alterations in method of payment by the introduction of individual production records and establishment of a definite task. A financial incentive is added by setting up labor grades with a gradation of time rates and clearly defined production qualification for each grade. The use of two fixed time rates with provisions that the higher rate shall be used when production is sustained at a certain level constitutes a relatively strong financial incentive.

Piece-rate Plans. The second class of wage-payment plans is based on the straight piece-rate method which in its original form did not include any minimum earning guarantee. As already explained, the first modification was the Manchester plan which retains the straight piece-rate feature and simply adds a guarantee that daily earnings will reach a minimum amount regardless of production. Taylor started with a straight piece-rate payment and introduced a definite task. When the rate of output equaled or exceeded this task the employee received a greater amount for all units produced. This means that there is a sharp increase in total earnings when task is reached and consequently a strong incentive to reach that point. The Merrick plan follows Taylor's by adding a third piece rate and reducing the difference between the first two, and Gantt provided for a guaranteed time rate until the operator could reach task, the point at which he shifts to a piece rate. Gantt also provided for an abrupt increase in earnings as the operator passes from the day guarantee to piece work.

Any piece rate plan which gives the operator one or more abrupt increases in the amount paid per unit as production increases is referred to as a differential or multiple piece-rate plan and the change in rate per piece is known as a "step." Different plans in this group have been developed from the use of a time wage guarantee and variations in the number of steps used, the amount of the step and the point at which it occurs. Taylor justified the payment of higher rates when production is increased by showing that only a small corresponding increase occurs in some indirect manufacturing costs and that no change takes place in others. As the units produced increases, the indirect costs are spread over a larger number of units and the unit cost of factory indirect expense is lowered, therefore, more than enough to offset

the increase in unit labor costs. The final result is a saving in total unit cost in spite of the larger portion going to the operator.

Gain-sharing Plans. In direct contrast to the multiple piece rate feature we find that the unifying characteristic of the third class of plans is a decrease in the increment per unit of output paid to direct labor as the degree of response is improved. The result is that as production increases the total wage of the operator goes up but he receives a diminishing payment per unit, so his earnings do not increase as fast as they would under a piece-rate plan. In most of the plans of this kind a minimum day rate or hourly wage is guaranteed. A standard task is set and any saving that the operator is able to effect by reducing the actual time required to complete the task is shared between him and the employer. Ordinarily, the gain sharing starts before actual response equals 100 per cent of a theoretical high task.

The plans belonging to this group vary chiefly in two respects, first in location of the production point relative to a high task at which gain sharing or premium starts and second in the portion of the saving paid to direct labor. The original Halsey plan, one of the plans in this classification which is widely used, provides that the saving in direct labor cost is to be divided equally between operator and employer. To the employee this means a fixed time wage and as his response goes above task an additional payment of one-half of an amount equivalent to a piece rate at task times the number of extra units produced. The employer's portion is sometimes subdivided and a large share paid to foremen and indirect labor. Another well known plan in this class is that of Bedaux who usually distributes three-fourths of the saving to the operator and the other fourth to supervision. The gain sharing principle is followed also in the plans of Diemer, Baum, Barth, Rowan, and Ficker, the first two incorporating step arrangements similar to those discussed under multiple piece-rate plans.

Empiric Plans. The remaining payment plans have been classified as empiric due to the fact that the incentive wage earnings are not based on a simple arithmetic pattern like piece work or gain sharing but increase according to a predetermined or empirically established scale as actual response approaches and goes beyond standard task. Fixed hourly wage rates are guaranteed and also serve as a basis for computing supplementary earnings. After the standard task has been set the actual response is compared with it and an index of efficiency is computed by finding what per cent of task the actual response represents. The percentage expressing the relationship between the standard and actual response is termed the per cent efficiency or bonus standing and for each gradation of this percentage a corresponding figure appears in the bonus table informing the operator what per cent of his time earnings will be paid to him as a bonus. In the Emerson plan, for instance, the bonus table indicates that supplementary payments start at 67 per cent efficiency. Working at this pace the operator receives a small fraction of 1 per cent of his time wage. As response improves from 67 to 100 per cent, the bonus earnings rise from 0.01 to 20 per cent of the time rate and above task 1 per cent of the time wage is added for each additional per cent of efficiency. It should be noted, however, that in spite of this fact the earning curve does not provide a piece rate above task.

Employees may not have a clear understanding of an empiric plan but usually most of them can compute their efficiency standing and then by use of the bonus table determine their bonus earnings.

Several others in the empiric class including the Knoeppel plan provide bonus payments starting at 67 per cent of task. The Wennerlund earning curve above task provides a bonus equal to piece-rate earnings, thereby allocating to the direct producer the entire saving in direct labor costs. Others follow the gain-sharing principle. The portion of the saving going to the employer is very small, however, except under some of the Parkhurst plan schedules. Step provisions for abrupt increases in bonus earnings also occur in this group in the plans of Bigelow, Bigelow-Knoeppel, and Parkhurst.

Danger of Classifying Wage Plans. Before leaving the classification of wage plans it should be noted that any attempt of this kind in which specific plans are referred to by name cannot be accepted as entirely accurate because it deals only with original plans. During an installation and after its completion, changes and additions are sometimes so extensive that not only the superstructure but the mathematical basis of the plan as well is altered materially. In actual practice, therefore, we should not be surprised to find a variation existing under the same name that has strayed so far away from the original plan that it really belongs in a different class.

Uses of Straight Time Payment. Wage payments based on the single factor of time have practically no incentive value and can be used effectively for two kinds of work: first, when the work itself or conditions surrounding performance are so unstandardized that it is impractical or impossible to determine with any degree of accuracy the quality and quantity of response that should be accomplished during any given period of time; and, second, wherever management control is so highly organized that incentive wage plans are unnecessary. The variety and quantity of productive work which cannot profitably be measured in some way has been diminishing steadily in modern progressive companies and now constitutes not more than 10 to 15 per cent of total volume measured in terms of productive hours. The major portion of straight day work still originates in plants where modern methods have not been accepted or in companies whose entire efforts are expended in maintaining self-assurance that operations are unique and therefore unmeasurable. Quality of workmanship in these plants is not as a rule any better than in the company where financial incentives are balanced by sensible methods of quality control.

The payment of a fixed time rate to operators in large mass-production plants is increasing. Whenever goods in process move continuously from one operation to the next the standard task is set automatically by the amount of work assigned and the movement of the production line. No wage incentives based on degree of response are necessary since that must be the same for each individual. The operator must synchornize his output with the flow of production or fall out of line, an incentive strong enough to move any employee if the hourly rate is high. Inference should not be made, however, that all employees on a continuous line production will respond satisfactorily to a straight time payment. Conditions often exist which make an incentive wage plan far more desirable.

Advantages of Piece-rate Plans. The shifting to the employee of all risk of gain or loss resulting from fluctuations in production constitutes our strongest financial incentive. This is especially true if piece rates are increased in the higher ranges of production. The straight piece-rate plan is comparatively easy to operate, clerical costs are low, operators have little difficulty in understanding the mathematics of the plan, and it serves as an excellent basis for budgets and standard costs. But flexibility in payment of individual wages is lost and if there are a large number of separate rates, general wage adjustments become very involved. There is no opportunity to include extra compensation to individual operators for such intangibles as loyalty, cooperation, versatility, regularity, and care of equipment.

Some companies, like Westinghouse Electric and Manufacturing, have overcome this objection by establishing an individual rate to each operator for a standard hour output. Here the amount of work constituting a standard hour is the same for every one but the amount paid to each man for a standard hour may vary. This method may be used to add flexibility to any piece rate plan. The administration of the plan is merely changed to a standard hour basis and all piece-rates are set in terms of hours instead of dollars.

Advantages of Gain Sharing. Gain-sharing plans were intended primarily for use in conjunction with tasks set on the basis of past records and estimates. Although the incentive value of the plan decreases, as the share of saving withheld from the operator is increased, it is also true that his earnings do not fall off rapidly when production is lowered. When this is the result of a variation in some factor beyond the control of the employee, his sense of justice may respond more favorably than in the case of a piece-rate plan.

Representing a sharing plan to employees as a partnership with the employer may sound so altruistic that the skeptical recipient will be moved to do a little mathematical analyzing with a resulting substitution of disgust for skepticism, especially if he is working on similar repetitive units and has had previous piece work experience. It is believed that morale and response will be affected much more favorably by a sound truthful presentation of a plan of this kind than by any lofty idealistic sugar coatings. If an operator's production, for example, can be increased temporarily by an unusually good run of raw material, he will respond to a gain-sharing plan realizing that the increase is not due to his efforts alone and that a poor run experienced at a later date will not reduce his earnings in direct proportion to the reduction in production.

Advantages of Empiric Plans. Many of the gain sharing plans together with those in the empiric group require more clerical work to record quantities produced, actual time consumed and to compute total earnings. The production and accounting records can be made to pay a large share of their own way, however, by being designed so that copies may be returned to operating departments and there serve as effective non-financial incentives. A number of the plans requiring more involved computation appear intricate when first introduced to the employee and some of them are never thoroughly understood by everyone. If adequate bonus tables and records are supplied enabling the employee to compute total earnings and thereby make the customary check on the accuracy of pay-roll computations, excellent results

will be secured in spite of the fact that the derivation of the formulae or graphic presentation of the earning curve never attains a state of conscious existence in the thought processes leading to greater exertion.

Selection of Wage Incentive Plans. The problem arising from our analysis of plans is that of selection. Which plan will secure the maximum cooperation between labor and management in the reduction of total unit cost to a minimum in any given set of conditions? How many different plans does the plant require?

The original solution was to select one of the incentive plans, install it in every department if possible, and leave those who couldn't be included under a straight time wage. Two or three years after installation the same plan would be operating successfully in some departments and in others the observer would find few traces of an incentive wage or else modifications so drastic that relationship with the original was extremely obscure. Plants with a combination of large scale and job order production were very apt to have this experience.

In other instances incentive plans which were not designed for the existing conditions have been used successfully for a considerable period before their inadequacies became apparent. This temporary success was due to the ease with which some savings in labor costs could be secured if no financial incentives existed prior to installation or much of the improvement was attributable to management controls, standardization of conditions, and non-financial incentives set up at the same time. Many large companies reached the point where employees' opposition to a plan became decidedly audible and management's objections numerous before real attempts at scientific selection were begun.

Number of Plans Needed. One of the first results of these studies was the increasing recognition of the fact that many large companies have such a large variety of operating conditions that a single incentive wage plan and a straight time wage plan require several or more modifications in order to insure the most effective response from operators in all departments. Further ramifications developed when it was found advisable to apply the same incentive plan to some operators as a group instead of placing them on an individual basis. It should also be noted that the profitable use of a number of wage plans is not confined to the larger companies. Single plants employing 500 or 600 employees or less often find that conditions also warrant the use of more than two wage plans.

Qualifications for Those Who Select. Selecting the wage incentive plan is an important assignment for someone in the organization who is familiar with the four classes of plans described and the distinctive features of the more common members of each group. This information can be secured from publications, consultants, and exchange of experience with other companies. Knowledge of internal conditions should be very extensive and should serve as a background for a broad understanding of the industrial relations, accounting and management aspects of the factors influencing selection. Finally an ability to evaluate the importance of each factor is required because all of the evidence will seldom indicate the superiority of any one plan and yet the number of wage incentive plans applied must be

reduced to a minimum in order to secure the lowest clerical and administrative costs.

Selecting the Elements of Response. The first analysis to be made prior to selection is concerned with the purpose of the incentive. How do we wish to use an incentive plan to reduce total unit cost? Our study begins with the three common elements of production, quantity, quality and consumption of materials. An attempt is made to determine to what extent the variations in these factors depends upon the human factor or fluctuations in the effort of the operator and to what extent these variations affect total unit cost. A careful analysis of itemized cost is the point of departure for the second step. The importance of each of these three elements varies considerably but usually for direct operators little time is required to find that quantity is the most important element, unless labor is being applied on very expensive raw material. Many times the identity of two elements merge and can be measured by a single index. Quality and quantity are combined most frequently and in some processes the relationship between quality and waste is very close. In the case of inspection and some forms of maintenance work we find that quantity is relatively unimportant and the operator's attention must center on quality. This procedure is undertaken, therefore, for the purpose of deciding what element in response shall receive the major emphasis and whether the wage incentive shall be based directly on a measurement of one element with those remaining left to other forms of control or whether supplementary incentive payments are to be set up for one or more of the remaining elements.

Factors Considered in Selecting Wage Plans. There are a large number of factors that will influence the selection of any type of wage plan after we have determined what elements of response are to serve as a direct basis for a financial incentive. In order to make the discussion clearer they are divided into three groups: labor factors, management factors, and cost factors. A few of the items in each group will be considered from the viewpoint of how they influence selection.

Labor Factors. In considering labor's probable reaction to a plan, those responsible for the choice should be close enough to the man at the bench to understand exactly how his mind works and what his attitudes are. Does the average operator possess sufficient intelligence to understand how one of the more complicated empiric or multiple piece-rate plans operate and why they are equitable or would they respond more willingly to a simple piece rate? The history of previous forms of payment, and still more important, the wage plan in use immediately prior to the new installation serve as a background for the operator's attitude and consequently should be considered. Straight day-work operators will accept a gain-sharing plan or empiric plan whose earning curve does not ascend on a piece-rate basis and response will be comparatively high while operators accustomed to piece work will object immediately. If the labor supply is restricted, it may be necessary to guarantee a high hourly rate with additional response easily secured by a gain-sharing plan. A high rate of turnover means that the wage plan should encourage a steep learning curve. The effort required may be stimulated most effectively by little or no hourly guarantee but a differential

piece rate that provides a very rapid increase in earnings in the lower stages of production.

A healthy morale among operators can be injured seriously by the introduction of a straight piece-rate plan which ignores differences in the more intangible qualities of employees while an empiric plan based on a low hourly rate may be just as strong and yet avoid this danger. A form of piece-rate payment based on standard hours rather than units produced is better suited to group applications where productive efficiency is the same for each member but differences in skill and ability require recognition in individual earnings. Stated briefly, labor factors considered include intelligence, skill and training, past history, supply available, morale, and degree of cooperation necessary among employees.

Management Factors. Among the management factors most importance is given to the method of determining tasks. A high piece-rate earning curve that is suitable for tasks accurately and scientifically determined may be entirely unfit for departments where rates depend largely on good judgement and past experience. The operator's attitude, even where gain sharing plans are in operation, is still decidedly opposed to poorly set tasks or a management that permits the continued existence of improperly maintained equipment, unnecessary variations in raw materials, inadequate supply of small tools and indirect materials, delivery of work improperly processed in the preceding operation or any condition that in his opinion unnecessarily retards his rate of output. There is little respect for the management that uses a sharing plan in order to avoid correcting these conditions and ultimately operators will rebel and disregard the premium plan as calling for more effort than the extra payment is worth.

Application of piece-rate plans demands that conditions affecting the rate of output and effectiveness of operator's efforts must be even more carefully standardized. A scientific job study should serve as a foundation for the setting of rates which will be satisfactory to operator and management until methods are changed. The possibility of setting accurate rates becomes especially important when multiple piece rates or step plans are considered. Here earnings increase rapidly, indicating to the employee that the maximum response is desired. Securing this degree of response will be practically impossible if a few poorly established rates and the resulting excessive earnings necessitate rate adjustments. As soon as confidence in stability of rates is lost, response will not go beyond that earning point which is considered as a safe maximum. Even the man of exceptional ability will hold back on the job rather than run the risk of assuming responsibility for a cut in rates.

Factory budgets and standard costs operate most successfully in conjunction with wage plans that give constant labor costs per unit produced. Adjustments can be made, however, for other types of plans. Production control has already been mentioned as capable of so much refinement that straight time payment may be entirely satisfactory. Obviously our wage plan should blend with the method of planning, scheduling, and recording production for dispatching requirements. Some of those who have devised payment plans have included them as part of a complete method of produc-

tion control. In this case an installation usually includes the entire management plan.

Cost Factors. The investigation of cost factors is the basis for an intelligent answer to the question, How will the plan affect total unit cost? It is important here that we do not confuse total unit cost with unit labor cost which is often only a small part of the manufacturing cost. As the worker's response improves, unit labor cost is decreased by use of a straight time wage or gain-sharing plan, remains constant under straight piece work and increases when multiple piece rates and step features are used. But the highest level of response comes only when the last type of plan is applied. Consequently if indirect expense is proportionately high as compared to direct labor due to the use of valuable equipment and heavy items of fixed expense, total unit cost may be lower as a result of spreading the burden over a larger number of units produced in spite of the increased labor cost per unit. In a plant where several large automatic machines are operated by one employee, for example, a step plan may give the lowest total unit cost because it is the strongest incentive and stimulates a maximum number of operators to come up to task.

Some increase in overhead usually occurs with installation. Clerical expense, inspection costs, time study, and rate setting staff salaries and other increases in indirect items can be estimated and listed as charges that should be more than offset by savings. Care is essential at this point in order to avoid disconcerting criticism by a skeptical treasurer after the plan is operating. He may admit that the plan is fine and production has increased merely as a tactful prelude to directing attention to the large increase in indirect expense that has been responsible for the failure to reduce total unit cost.

Maximum savings will result only from a detailed evaluation of all the factors mentioned and a selection of the plan favored by those that weigh most heavily in the final manufacturing cost.

Installation of Wage Incentives. After a thorough method has been followed in selecting one of the existing wage plans or formulating a new modification, installation becomes a problem in salesmanship and training. Assuming that the difficult assignment of developing a reliable index of measurement and setting accurate tasks has been completed satisfactorily, the successful installation of the plan is a matter of tactful explanation to the operator of a method whereby higher earnings will be possible. To facilitate a high degree of response we must also provide the instructions and supervised training that will enable him to reach the higher ranges of the earning curve. Beginning with the highest official in the plant and ending with the departmental foreman or gang boss, the line officials should be given all the details of the plan before any attempt is made to explain it to any of their operators who are selected to inaugurate actual operations.

Clear and simple explanations with plenty of concrete examples showing typical wage computations are essential and should be given to the operator by a staff member rather than risk an incomplete description by a foreman who has just become acquainted with the plan. An individual application will progress smoothly if presented to one or several operators who are

intelligent and inclined to accept new ideas. Increased earnings soon arouse a receptive attitude in the whole department. When the installation has gone this far the plan can be tested for a period and necessary adjustments made before extension to other departments where further modifications may be required. Wherever a highly developed spirit of cooperation among operators is essential or desirable, the plan can be applied to operators on a group basis. Successful installation here depends to a large measure on selling the plan to the group leader and giving him a thorough understanding of his responsibilities, particularly his influence in determining the earnings of each individual by regulating the size of his group to correspond with the fluctuations in volume of work.

Maintaining Standard Conditions. Difficulties often arise after the plan is installed in maintaining the conditions regarded as standard at the time the task was set. This is a very definite responsibility falling to management and as soon as incidents begin to occur regularly which indicate to the operators that management is not viewing these responsibilities seriously, confidence and interest begin to wane. Machinery and equipment properly maintained, inspection requirements clearly outlined and allowed to remain unchanged, provision for adequate supply of small tools, materials, and indirect labor, these factors and others affecting output are given careful attention in plants where incentive wage plans are the most satisfactory.

For unusual conditions beyond the control of management, temporary adjustments in rates are sometimes made. This practice can easily become too common and result in changes and allowances being made for conditions which will soon be offset by some temporary advantage in the opposite direction. If no systematic control over indirect expense has been set up, more detailed attention to these items of departmental operating cost is recommended as a counteragent to the natural tendency to emphasize increased production at the expense of added costs elsewhere.

Addition of Non-financial Incentives. Regardless of the strength of the wage incentive plan, response is improved by the development of non-financial incentives. Individual production records posted in the department, departmental totals or standings advertised throughout the division or plant, graphic presentations of progress or comparisons of standard and actual performance, and provision for written explanations when operators fail to reach task are methods that have given excellent results when used in addition to the financial incentive. All extra earnings are given a more unmistakable identity when placed in a separate pay envelope or issued by separate check. And finally an occasional verbal recognition of outstanding performance by line and staff officials strikes a very responsive chord and yet requires so little effort that it is a habit worth cultivating.

Use of Consultants. Business service organizations provide valuable aid to the company whose personnel does not include anyone who has had previous training in incentive wage installations. Costly mistakes are often made, however, by clients who retain consultants and assume that they can come into a plant and set up a "system" that is complete and ready to be operated permanently by a person whose mental capacity is suited for routine activities only. It is the opinion of the writer that outside

service is most helpful in this connection when it is used primarily in an advisory capacity and as a means of training members of the organization whose ability to do original thinking has already been demonstrated. Men of this type can start the installation under constant guidance of the consultant who gives instructions in practical application of principles and, by reason of a wide experience, many helpful suggestions regarding modifications to meet unusual conditions. The less work actually performed by those from the outside, the better for those who are left to carry on through the years of installation. It is also certain that the efficient head of the shop methods department devoted to time study and wage incentives never succeeds in carrying his plant to such an advanced state of perfection that his activities can be described as routine.

Wage Incentives in Drafting, Tool, and Machine Departments. Recent discussions of incentive wage plans have devoted special attention to applications in tool rooms, machine and drafting departments. Usually the activities of the first two include a large amount of repair and replacement work as well as manufacture of new equipment. The difficulty in these departments has not been the application of the wage plan but the development of reliable indices for measuring response and establishing standard tasks to serve as a basis for the incentive plan. In the average-size plant these departments have little repetitive production if output is regarded in terms of complete dies, machine parts, or drawings. An analysis of all operations required to complete each unit or component part of the complete die or drawing, however, usually results in a catalogue of operations or fundamental elements that are largely repetitive in spite of slight variations in size, shape, and contour. Accurate time studies can be made for such elements and tables formulated for building up tasks for the completed unit.

Time elapsing before total earnings are computed often extends over a period of several weeks when a single rate for the completed job is given to the operator. A gain-sharing plan appears to be well suited for this class of work, but even here it is dangerous to generalize because instances are known where straight piece rates merely estimated by the foreman have been very effective in securing a high level of response from employees in a jobbing machine shop.

A financial incentive is just as necessary in these departments as in any of the others since observation and experience indicate that response under a straight time plan is no more likely to be above a 50 or 60 per cent level here than anywhere else. True the work is inherently better suited for holding the operator's interest, but the variations responsible for this fact also prevent the close supervision and control possible in repetitive production departments. Highly skilled operators are also tempted to drift into an attitude of smugness and security that is not especially conducive to maximum response.

Maintenance Departments and Other Indirect Labor. Maintenance department employees and other indirect labor offer a problem similar to the one in the drafting or tool room. Much of the indirect labor, however, is assigned to activities so repetitive that there is little difficulty in measuring response and determining tasks. Sweepers, power house and boiler room

operators, and window washers often fall in this class. Other indirect operators such as truckers and factory clerks are sometimes placed on an individual incentive basis or included with a number of productive operators in a group application. For those assigned to loading or unloading in the shipping and stores departments, individual response cannot be segregated but combined results are easily measured, thereby facilitating group applications.

The Factory Office. The last class of production division personnel to receive incentive wages has been the factory office employee. Individual or group applications have been set up for clerical workers and usually a payment, based on group results, to production planning, scheduling, and other staff departments where it has been possible to establish standards of accomplishment. And finally, after successfully selling all the others on financial incentives, the time-study department with a true spirit of gallantry has waited until last to declare that even it needed an occasional stimulus and thereupon, of its own volition, has made its bow and entered the incentive circle.

EXTRA FINANCIAL INCENTIVES FOR SUPERVISORS

By E. E. BRINKMAN, *Industrial Engineer, Holeproof Hosiery Company*

During the World War and the period immediately following it, financial incentives were frequently provided for foremen to increase production with little regard for the means employed in obtaining it. It appears to have been only recently that much progress has been made in the development of some of the more scientifically balanced incentives for supervisors. In the continuing war on waste in industry started a few years ago, industrial management has found it increasingly necessary to pay attention to the elimination of waste in every field of activity and in every feature of operation of each individual department of the business. As a result, supervisors have been provided with incentives to improve a number of conditions, such as:

1. Working efficiency.
2. Idle or lost time of all workers and machinery.
3. Repairs.
4. Scrap and waste.
5. Overhead costs, such as indirect labor, labor turnover, cost of supplies.

In comparison with the mass of literature available on other industrial management problems, very little has been written on methods used in stimulating supervisors to step forward and more completely assume their vital responsibility in the role of "the key men in industry." It shall be the object of this discussion to clarify the principles underlying the design and operation of well-balanced and effective incentives, to set forth a tentative summary of existing practices employed in the stimulation of supervisors and to illustrate some of the principles involved in the operation of financial incentives.

An accurate discussion of incentives for supervisors has also been found to be dependent upon a uniform definition of this term. Webster has ably defined incentive as "that which moves the mind or has a tendency to incite

to determination and action." In accordance with this definition, an incentive for supervisors can be defined as that systematic arrangement of manifesting recognition of achievement which moves to thinking and incites to action, those people directing the work of others. An incentive must therefore be systematic and definitely arranged. There must be a manifestation of recognition of good work in some tangible or intangible form that will use a man's self-interest as a handle in stimulating the supervisors. These incentives, in order to be effective, must therefore be designed to stimulate the suggestion of improvements in such a manner that they can be believed to be a possibility. If the incentive then also incites to action this same supervisor, the improvement suggested by his thinking will become a reality and a contribution to industrial efficiency. This is the fundamental object of incentives. Those arrangements that are often called incentives and are not designed to produce this mental effect and physical action are only useless hindrances to smooth operation of an industrial organization.

Classification of Incentive Plans for Supervisors. A recent analysis of existing practices among thirty-five representative concerns in twenty-one branches of American and Canadian industries brought out the fact that incentive plans for supervisors in use today can be classed according to their character as follows:

1. *Appeals to Inherent Motives Other Than the Desire for Money.* A number of such plans manifest a recognition of good work through the provision of special considerations, such as promotion, praise, publicity, prizes, and emblems or certificates of recognition. Most of the appeals to inherent motives have their roots in primary motives, such as self-preservation, taste, pride, and desire for approbation. Many employers can profitably make use of this type of incentive where none is being employed today. It can even be used where other types of incentives are in force.

2. *Grading and Salary Adjustment Plans.* This plan consists primarily of systematically evaluating the results of a supervisor's work and revising salaries in accordance with the results of this grading. The salary adjustment is universally accepted as a powerful incentive and has possibly a greater effect upon people higher up in the ranks of industrial organization. A consideration of incentives for supervisors would therefore be incomplete without the inclusion of the salary adjustment incentive, particularly if it is accompanied by systematic grading.

3. *Financial Incentives, Indirect Measurement.* Profit sharing, stock ownership, and annual bonus systems fall under this classification. The results of supervisors are, in these plans, measured indirectly, usually in the form of profits made from the year's operation. The measurement of results is necessarily indirect and is a composite of the results of the efforts of all supervisors and executives in the organization. The effectiveness of profit sharing has been shown to be in proportion to the rank of the people participating in the plan and inversely proportional to the size of the group participating.

Stock ownership is becoming prominent. Much thought and study is being applied to its successful application. The problems involved are numerous and it has been found that all business reaction and plans must be carefully weighed before their adoption, because ultimate effects are very

far reaching and have a definite effect upon the social structure of American industry.

Annual bonuses usually consist of an arbitrary bestowal of cash to supervisors deserving special recognition. This plan is probably in more general use than is usually known, because many of the bonuses are paid in an individual and personal manner by officials of corporations and proprietors of business organizations.

4. *Financial Incentives, Direct Measurement.* Incentives falling under this classification consist of premiums and bonuses computed and paid from results of operation in comparison with systematically or scientifically established standards. Results of operation usually include those factors and features of operation over which the supervisors as individuals or as a group have an opportunity to exercise control.

This type of incentive has apparently been given considerable application in its many varying forms. It also appears to have much difficulty in being uniformly well known and understood. This, however, is natural, because such plans do not lend themselves to general application and general discussion. The plans are usually designed to fit actually existing requirements in each individual company, and in each individual supervisor's job. Varying factors are employed for providing incentives on the features of operation which require attention from the supervisors.

The direct measurement of results and the payment of money for good work under this class of incentive plan makes necessary, an accurate and reliable method of either measurement, grading, or a combination of both.

Measuring. There are certain characteristics bearing upon the qualifications of a supervisor which may be definitely ascertained and measured. These characteristics concern mainly the tangible elements of his work. We can thus measure in definite units a man's attendance, the quantity and quality of production under his supervision, relative costs, and some other factors having to do with his performance and efficiency. Systematic recording of these tangible factors is what is meant by measuring.

Grading. There are important but less tangible characteristics which cannot be definitely measured. These characteristics include character, personality, leadership, capacity for development, and other items which must be judged mainly by opinion. These characteristics are included under the term grading.

An accurate and reliable system of collecting and recording data on the results of the operation are of primary importance when measurement is used. Cost accounting, for example, must be well established for the successful operation of a direct-measurement incentive plan, because the plan, in order to be effective, must produce definite results that mean savings to the company in order that the premium or bonus paid will have the desired effect upon the supervisors. The supervisor must feel that the premium he receives is a part of the savings he has effected. A systematic recording of the intangible characteristics is necessary for a direct grading financial incentive plan.

Factors Measured. Establishment of incentives based on direct measurement and grading requires an exhaustive study of the supervisor's job and

selection of the proper factors that are to be measured. What are the things the supervisor is to accomplish and how well can they be expected to be done? It is probable that most concerns employing this method of designing their foremen's incentives use different factors for supervisors in different departments because the factors that determine profitable operation of departments are different. This can be expected because a certain group of work is usually departmentized because it is different from other work in the same factory. The following summary of factors used as a basis for operating direct measurement financial incentives will act as a guide and suggestive table for the selection of factors in the design of incentive plans or for the improvement of existing plans.

- a. Efficiency of productive workers.
- b. Quality of output.
- c. Utilization of equipment and machinery.
- d. Amount of production.
- e. Elimination of waste materials.
- f. Non-productive or indirect labor costs
- g. General cost of operation.
- h. Development of short cut methods.
- i. Safety and accidents.
- j. Cost of supplies used.
- k. Operations on piece work.

Some companies using financial incentives of the direct measurement type base the entire bonus payment on one of these eleven factors; efficiency of productive workers or amount of production often serving as a base in cases of this kind. Others use from two to five of these factors in one and the same incentive plan. When several or more factors are used combinations of direct measurement and grading are frequently set up.

Individual and Group Applications. Does the foreman's plan operate separately or on a group basis? This question is being asked by many people considering the use of direct measurement financial incentives and much is said for and against the use of the separate incentive plan for each supervisor. It appears that both arrangements have their place because it is conceivable that there are cases where the work of one supervisor cannot be clearly identified from the results of the efforts of another and the employment of a group plan is inevitable. On the other hand, it is generally conceded that the pulling power of an incentive plan is greatest when one individual only is in the plan and decreases as the number of people in the group increases. Most companies, therefore, use a separate incentive plan for each supervisor wherever individual results can be definitely segregated without excessive clerical costs.

Making the Foremen's Incentive Effective. To secure the greatest degree of effectiveness it is important to select only factors that are directly under the supervision of the foreman and to place major emphasis on those accurately measured. The plan must have the whole-hearted support of management in the maintenance of standardized operating conditions. The cooperation of the shop methods staff is particularly desirable whenever the supervisor is attempting to make changes that he believes will result

in improved operations. In order to secure an active interest on the part of the employer it is only just that participation in the benefits of the incentive plan be accompanied by certain responsibilities, such as the assumption of losses in a sportsmanlike manner. The opportunity for gains should always be accompanied by equal provision for assuming losses and any provisions for penalties should include equal opportunities of earning a reward for good work. Plans operating successfully are usually responsible for a feeling of responsibility for conditions ordinarily considered beyond the control of the supervisor.

The proportion of a total savings paid out to supervisors is an important consideration and will usually determine whether a foreman will interest himself in a certain factor. Many plans are designed so that approximately \$1 out of every \$8 to \$10 saving is paid out in the form of premiums to the supervisors. This ratio will of course vary with the size of the department under the foreman's control. Generally speaking, the premium for a well operated department in order to be effective, should run approximately 20 to 30 per cent of his total income.

In addition to these requirements the following principles seem also to underlie an effective plan of the direct measurement type:

a. Statements should be drawn up stating definitely in advance, for what operating factors the supervisor is responsible. These statements should take into account all factors of operation and should show the standards of perfection on each factor.

b. The use of mathematical formulas and schedules in the computation of the supervisor's premium is essential in the elimination of arbitrary methods and helps to promote confidence in the justice of the plan.

c. In order to have each factor in the supervisor's incentive plan signify its proper importance, money earned on each factor for good work must be in proportion to the savings made.

d. A proper balance should be made between the number of factors used and the number of objects the supervisor should have in directing the activities under his control. Generally speaking, there should be as many factors as there are objects, but a consideration of the cost of record keeping frequently makes a deviation from this rule advisable.

e. The standards upon which savings and bonuses are to be computed should be determined from standard operating conditions. In other words, the company shall have done, through the employment of systematic and scientific management, all in their power to make the plant as efficient as they know how. Beyond this point, it can be understood that all operating improvements originating in the minds of the supervisor and showing savings on the operating statement of the department should be recognized in the incentive plan.

f. The premiums earned should be paid as often as the supervisor is paid his basic salary. This gives the employing company the maximum benefit from the operation of any incentive plan, because there is very little lag between the time of making savings and getting the bonus. The absence of this lag makes it easy to associate possible improved operating conditions with the reward that will be due on the supervisor's following pay check.

g. Incentives for the stimulation of departmental efficiency must be so designed as also to bring about harmony between departments in the advancement of general plant efficiency. When this balance in the incentive is

maintained, the supervisory organization will have the spirit, enthusiasm and self interest to operate each department and the business as a complete unit on a high plane of productive and service rendering efficiency.

Plan of the Holeproof Hosiery Company. The supervisors incentive plan used by the Holeproof Hosiery company is described in detail as an example of a direct measurement financial incentive. Its factors used as a basis for premium computation are varied, depending upon the problems existing in each department. There are some factors, however, that are universal in application to the work of all departments. These factors have been selected largely upon the principle that they are within the control of the supervisors and that they can be accurately measured. The selecting of these factors has been a process of development and has resulted from reviews of experiences in applying first one factor and then adding another. The application of one factor has frequently suggested possibilities in applying an additional factor in some other phase of operation. This development in the application of additional factors has also been dependent upon the ability of supervisors to assume responsibility for certain conditions over which they were told they had control. The factors in existence today may be summarized as follows:

1. *Productivity of Direct Workers.* This factor is a measure of the efficiency of the workers employed on standardized operations, where time standards have been established from careful time studies and motion analyses. The actual measurement of the department's efficiency on productive workers is made possible by the use of the premium wage system in operation for the productive workers as the following sample computation will illustrate:

Total basic wages of productive work of the department.	\$4,000
Total premiums earned by productive workers of department. . .	\$1,000
Average per cent premium of productive work in department. . .	25
Department's standard per cent premium.	10
Foreman's premium, average per cent in excess of department standard	15

2. *Increase in Quality of Workmanship.* Increased quality of workmanship is reflected in the percentage of perfects obtained. The foreman's premium for increases in quality is computed in combination with the premium for productive worker's efficiency shown above. This is accomplished in an automatic form by having the per cent of perfects affect the premium of the direct workers so that \$1,000 premium of the direct workers, given in the above example, is composed partly of credit for high percentage of perfects.

3. *Improvement and Training of Beginners.* The cost of training beginners is the largest factor in the tremendous cost of labor turnover. This cost can be reduced by insuring the gradual and consistent development of each beginner over a period of time until standard production is being maintained. This company has established standard beginner schedules which specify the production the beginner must turn out during each successive week of the learning period. Foremen are expected to check up all beginners with

respect to their progress in comparison to the schedules of production. These schedules vary in accordance with the skill demanded on the operations from two weeks up to as high as twenty-six weeks. The foreman is provided with an incentive to give the best training possible by eliminating from the computation of the average per cent premium of the productive workers, the records of the beginners who have attained or exceeded the beginner's schedule. The elimination of these beginners, in the computation of the department's average, has a tendency to improve this factor. While a number of beginners put in any given department may not always be within the control of the foreman, the speed with which these people improve is certainly within their control and rewards for good work of this kind should produce gratifying results.

4. *Reduction of Indirect Labor Costs.* It is our contention that all overhead costs within the control of the supervisors should enter into the computation of the supervisors' premium, if these factors are readily subject to accurate measurement. This company has found it possible thus far to measure accurately only the indirect labor costs with the hope that future developments will make possible a more accurate measure of other controllable overhead expense items in a simple and effective manner. Indirect labor costs have, however, been found subject to accurate measurement in comparison to standards. The standards for indirect labor have been established on the basis of past performance combined with a complete analysis of indirect labor requirements in the department. These standards are expressed in terms of per cent of direct labor. Savings or losses made in the expenditure of indirect labor in comparison with these standards cause either a diminution or enhancement of the total premium of the supervisors, as the following example will illustrate:

Department's total basic wages.....	\$5,000
Department's standard indirect labor at 20 per cent.....	\$1,000
Actual expenditure for indirect labor.....	\$ 900
Gain.....	\$ 100

Foreman's per cent premium on indirect labor costs	$\frac{\$100}{\$5,000} \times 5$	10
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You will notice in the above computation, the multiplying factor of five. This multiplying factor is used for determining premium on the basis of dollar results obtained. It is admittedly an arbitrary figure but it permits the systematic computation of a premium that will be in proportion to money value of the results achieved.

5. *Reduction of Time Work on Unstandardized Operations.* It is generally known that day work performed, while not on standard operations, is performed at about 60 per cent of possible piece work production with the operation completely standardized with regard to materials, tools, and methods. While the company has a regular staff of time study engineers, who have as part of their function the standardization of new work, the progress of standardization of new work and the facility with which standard operations are effected are dependent to a large degree upon the interest and cooperation extended by the foreman. The measurement of this item

is accomplished by including the day work wages in the computation of indirect labor costs shown in the previous factor. In other words, the department showing a gain on indirect labor of \$100 but having \$30 of wages paid in the form of time work, will have available for premium computation on the indirect labor cost factor, only \$70.

6. *Waste Reduction.* This waste-reduction factor is essentially the same as other factors. There is, however, one difference in the application of this factor in that not all supervisors participate in it. There are employed certain functionary supervisors in charge of machines, who have as their duties the adjustment of machines for proper production and elimination of waste. These people participate in this premium because they have the greatest amount of control over this item. The addition of this incentive to other workers and other supervisors not having so much control over this factor would frequently make their incentive plan confusing.

All supervisors' plans are operated on an individual basis, each foreman participating only in the results obtained in the department over which he has control. This type of arrangement makes it possible to have reported all those items of trouble existing in certain departments caused by some other department. A foreman will not allow trouble caused in a preceding department to reduce his premium. The trouble is reported and investigated by people in a position to give this unbiased attention. If the complaint is justified, the increased costs entailed in the one department are transferred to the department causing this trouble, thereby affecting the premium of that department's foreman.

The amount of business the company does affects the supervisor's premium indirectly in that it is not always possible to reduce indirect labor costs in exactly the same proportion as a reduction in the amount of business done. It is also possible when the amount of business increases for the foreman to receive some slight advantage by avoiding the increase of indirect labor costs when direct labor pay rolls increase. On the other hand, when direct labor pay rolls decrease, the reduction of forces is usually effected by the elimination of the undesirable and the poor people in the department. This process raises the average productivity of the department and has a tendency to offset the decrease in premium on the indirect labor factor. It has been our contention that the foreman's premium should be dependent upon efficiency only. The size of the department under the direction of the foreman shall be reflected in the basic salary. Any changes in the size of the department are taken care of by changes in salary.

The standards upon which the foreman's premiums are based are permanent in exactly the same manner as all standard time units employed for wage incentive plans for direct workers.

Premiums earned by supervisors are not secret in this company. Great use is made of the records of good premiums earned by satisfactory supervisors as examples to foremen whose departments are temporarily in poor shape. The results obtained from the operation of incentives in the Hole-proof Hosiery Company are as follows:

- a. Indirect labor costs are lower.
- b. Efficiency is higher.

- c. Quality is better.
- d. New styles get underway faster through rapid standardization of work.
- e. Waste has been materially reduced by those participating under these plans.

Many other intangible results have been obtained, one of the outstanding of which has been the improved attitude of all foremen. They have assumed generally a businesslike attitude towards premiums and have learned that business is a game of rendering universally satisfactory service involving sportsmanship as well as judgment and resourcefulness.

SETTING THE BEGINNING WAGE FOR JOBS ON INCENTIVE WAGE PAYMENT PLANS

By E. H. LITTLE, *Assistant Supervisor, Industrial Relations, United States Rubber Company*

There are certain principles to be observed in setting the beginning rates of pay. These apply to the hiring rate and to the weekly wage until the payment for the individual's output exceeds the hiring rate.

Hiring Rates for Inexperienced Employees. There should be established one hiring rate for inexperienced employees for each class of labor. These hiring rates may fluctuate with changing labor conditions:

- A man's hiring rate.
- A woman's hiring rate.
- A young man's or a boy's hiring rate.

Exceptions. Certain unusual jobs for which particular qualifications are specified may require hiring rates higher than the one established for that class of labor. For the ordinary jobs, however, one hiring rate for each should be sufficient.

Fixing the Hiring Rate. The initial hourly rate should be as low as is consistent with the market hiring rate. It should be high enough to be competitive, but low enough so that the effort necessary to exceed that rate on the incentive wage payment plan presents as small a discouragement factor as possible.

When to Pay Day Work. If it takes two weeks or less to exceed the hiring rate on incentive wage payment, day work should be paid for this period on the theory that the cost of administering a training allowance would be greater than the benefit derived for so short a period.

Length of the Day Work Period. The length of the day work period should be the time that it is felt that all emphasis should be on quality and method of operation as compared to production. This period is usually one week and rarely exceeds two.

Training Allowance (or Training Bonus). After this period, day work payment should be supplemented by a training allowance. This allowance should decrease in proportion to the rate of normal increase of the average employee.

The Purpose of the Training Allowance. The aim of the training allowance is to provide production incentive as soon as possible. The allowance must be carefully adjusted to give a gradually ascending scale of pay, and closely followed to determine real reasons for individual variations from standard progress records.

How to Arrive at the Training Allowance. There should be a predetermined schedule of work for each job being learned, figured on the basis of progress records of average employees learning the job. This production should be paid for on an incentive wage payment basis. The difference between this amount and the amount guaranteed, figured daily, weekly, or hourly should be paid for on an hourly basis. This is the *training allowance*. If over four weeks are required by the average employee to earn more on an incentive wage payment than the hiring rate, the training allowance should be worked out so that the earnings of the average operator at the end of six weeks are at least two cents per hour above the hiring rate. Such a rate of increase should continue through the training period.

Hiring rate44 per hour Standard wage for job60 per hour				The exceptional operator	
Schedule, weeks	Training allowance	Predetermined estimate of earnings*	Predetermined estimate total earnings, average operators	Actual earnings	Actual total earnings
1st . . . . .		.10	.44 day work	.15	44 day work
2d	28	16	.44	.22	50
3d	20	25	.45	.30	50
4th	17	.30	.47	.35	52
5th	12	35	.47	.41	53
6th	08	.40	.48	.47	55
7th . . . . .	.04	.45	.49	.53	57
8th		50	50 { incentive wage payment	.60	60 { incentive wage payment

* NOTE. Based on progress record of actual earnings of ordinary employees who have learned the job.

Fixed Training Allowance vs. Percentage Training Allowance. By the above method the training allowance is fixed. Where a training allowance is on a percentage basis, the employee is paid actual earnings plus a predetermined percentage of estimated earnings. If the foregoing training allowance had been on this basis we should have had:

1st week, day work.

2d week, actual earnings plus 165 per cent of actual earnings.

3d week, actual earnings plus	80 per cent of actual earnings.
4th week, actual earnings plus	57 per cent of actual earnings.
5th week, actual earnings plus	34 per cent of actual earnings.
6th week, actual earnings plus	20 per cent of actual earnings.
7th week, actual earnings plus	9 per cent of actual earnings.

Training allowances are most needed for the average operator. If all operators were exceptional we could pay them on day work throughout the training period. A percentage training allowance unnecessarily rewards the operator who learns quickly and may prove to be a discouragement factor to the average or below average operator. Using these percentages to figure earnings of the exceptional operator in the foregoing table will illustrate the difference between a fixed and a percentage training allowance.

The Flexibility of Training Allowances. Training allowances, unlike rates, need not be fixed. They can be changed with each new group learning as well as with experience and changing conditions. Reductions in training allowances are no problem. Therefore since earnings less than the hiring rate during the learning period are very discouraging and consequently conducive to turnover, it is wise to err on the side of liberality in setting the training allowance. An average employee should never earn less per hour than his hiring rate.

CHAPTER X

QUALITY AND INSPECTION

BY ROBERT W. KENT, *Vice President, Bigelow, Kent, Willard & Co.*

The control of quality is the usually attributed reason for having inspection. When one gives even preliminary consideration to a non-dictionary definition of the term "inspection," it is not easy to comprehend why the term inspection should so generally be limited to a product. After all, inspection is investigation for the purpose of determining whether or not things are as they should be. Unfortunately, industry in general, and the public at large seem more frequently to believe that inspection is for the purpose of determining how large a proportion of things investigated may be found to be defective, or in other words, as they should not be.

It is probable that the majority of us when confronted with the term inspection or inspector think of a grouchy individual with a hammer and a stamping die, the latter of which he guards most zealously because its use constitutes approval. We think of this individual as being extremely niggardly and unwilling to approve anything that may by any possible chance be construed as not up to specification.

Fortunately, inspection as thus described represents but an infinitesimal amount of inspection as actually practiced.

Management is probably responsible 99 per cent of the time for success or failure in our various industrial enterprises. Unfortunately, in the great majority of cases management expends a large proportion of its time in inspection, or in other words, searching out the truth with regard to the operation of the business and the reason for these truths. When we find an enterprise in which management is not burdened with the responsibilities of investigation or inspection, but is able to devote a large proportion of its time to constructive effort in developing and applying cures and remedies for the unsatisfactory situations found as a result of investigation or inspection, then we may be assured of a highly successful enterprise.

Is it not reasonable, therefore, to assume that management's effort should be devoted as largely as possible to action rather than to investigation? The unsuccessful manager usually fails because of something he did *not* know rather than because of failure to act as a result of the things he did know.

When we assume that inspection applies only to the control of quality we are indeed overlooking a majority of the advantages that should be gained from inspection.

Uses of Inspection. In addition to control of quality, inspection can relieve management of much of its work of an investigating character. We

are told that inspection is for the purpose of quality control. Should it not also be for the purpose of cost control? Inventory control? Control of rate of production? Of material utilization? Effectiveness of labor? Burden expense? Labor turnover? Process standards development? Factory hygiene? Equipment maintenance? Accident prevention? Employee welfare? And last and perhaps most important of all—insurance of constant and continued progress with regard to all of the items listed?

Control of Quality. Limiting ourselves for the moment to the usually accepted purpose of inspection, namely, quality control, it seems desirable that we should answer for ourselves such questions as, Why do we desire quality? and, consequently, Why do we require inspection of product?

The growing experience which any business analyst accumulates continues to impress upon him the fact that a mercenary reason is to be found for almost everything desirable in business, if indeed that thing possesses merit. In other words, a proper profit is a truly moral requisite of any business enterprise. Assuming therefore again that inspection is for the purpose of controlling, or rather producing quality, it develops that quality is desired in order that the enterprise concerned may be profitable. Quality contributes to profit in two distinct ways. In the first place quality increases the sales appeal of a product. Secondly, quality further contributes by maintaining consumer acceptance and satisfaction.

Various writers on the subject of inspection have pointed out that while quality is worth paying for, quality is not necessarily expensive as far as production costs are concerned. If standardization and uniformity of product be constituents of quality, it is certainly true that to this extent improved quality usually leads to reduced rather than increased costs. Disciples of scientific management have learned through repeated proof that standardization and uniformity of product do make for manufacturing economy.

Inspection of product is essential to the attainment of standardization and uniformity, and therefore is an aid in reducing manufacturing costs, as well as eliminating scrap losses, aiding distribution, and thus contributing to profit. Inspection is essential in improving and insuring quality. Our reason for inspection is therefore, profits. Inspection can however aid in producing profits in many ways other than control of quality. The purpose of inspection, broadly stated, is then to produce a proper product at a proper profit.

Organization of Inspection. In undertaking the proper organization of the inspection work of a particular enterprise, it is first essential that the particular conditions under which the enterprise operates receive thought.

To attempt to develop a standardized procedure under which the function of inspection might be applied to business enterprises in general would prove disastrous probably in the majority of applications. In delineating procedure for organization of the inspection function, we are simply outlining a method, and while methods should always incorporate basic principles, the methods themselves can seldom be standardized and prescribed on a uniform basis. One respect in which practically all business executives consistently agree

is that their own businesses are different. It is the writer's belief that in this contention they are correct. When this thought is, however, interpreted to mean that basic principles do not apply to their business, the interpreter is in error. It is not known that any set of fundamental laws or basic principles governing inspection procedure have ever been published, and that no such set of laws exist may very well be true from the fact that inspection as an important function of management is only beginning to be recognized.

It is true that in certain isolated industries the function of inspection has been developed to a fairly high degree. Manufacturing industries as a whole have, however, been pitifully weak in this regard, and were it not for the relatively high development of mass- and line-production methods in America it is improbable that the necessity for, or recognition of, the inspection function as one of the most important functions of management would have arisen. The necessity for *interchangability of parts* required for mass production methods has contributed to a large degree to the development of inspection methods. Interchangeability has required improvement in accuracy and hence improvement in quality.

Another factor has recently arisen in industry which has already and will further result in improvement in quality. This factor is that of *increased competition* due to a change in the direction trend of commodity prices in general. For the last two or three decades at least this trend has been upward. Statisticians agree that the present trend is downward and that this downward trend, at least in its major aspects, will continue for decades to come. Downward trends in commodity prices increase competition, and competition is one of the greatest contributors to improvement in quality. Necessity for improvement in quality is the father to development of the inspection function.

Line or progressive production methods are being rapidly adopted throughout industry and in work of this type *lack of uniformity* becomes an increasingly costly item. Lack of uniformity causes interruptions which may affect a large number of workers. The development of automatic and semiautomatic machinery also requires a higher degree of uniformity than hand methods have required. These developments have resulted in a large number of automatic or mechanical methods of inspection, and it is probable that one of the greatest developments in manufacturing methods as a whole in the next few years will be from the application of such mechanical and automatic scientific methods of inspection. The field for the photoelectric cell alone seems almost boundless. Already it has had application in connection with color shading, counting, measuring dimensional characteristics, the extent of gloss or sheen in finishes, and other quality characteristics. Another application of science to inspection exists in the increasing use of microprojection and magnification equipment.

Inspection as an art is so rapidly gaining in importance that it is indeed dangerous to attempt classification in its present status. Formerly it might have been safe to group industries and say that in general centralized inspection methods would largely apply to certain of these groups and that decentralized inspection would be most logical for other groups, but such is not

now the case. There seems to be almost a stampede from centralized to decentralized inspection methods in nearly all groups of industries.

Measured Quality. In the case of centralized inspection departments, inspection consisted very largely of two divisions, namely, judged quality and measured quality, and as we seem to be going through an evolution from centralized to decentralized inspection, so we seem to be going through correspondingly great changes from judged quality to measured quality. Color shades in time past have almost entirely been a matter of the opinion of experts. We now find ways and means of determining scientifically and in a mechanical manner degrees of variations in the shade of colors. Extent of lustre or sheen, formerly only a matter of judgment, can now be measured and recorded on the dials of instruments. Even the accuracy of measurements which in the past have not been considered subject to argument now becomes a question of degree of accuracy. Where measurements affect appearance for instance, it is improbable that a normal eye can detect a variation of, say, five-thousandths of an inch, particularly if the measurement under consideration is relative to some considerably larger measurement.

On the other hand where measurements affect construction or operation of machinery a variation of five-ten-thousandths of an inch may be sufficient to be detected in the completed product. In the one case we have a variation ten times as great as that in the other case and yet the greater variation is of no consequence so far as sales appeal or consumer acceptance is concerned, while in the latter case the much more minute variation constitutes a defect. The development of scientific and mechanistic equipment for detail accomplishments that were formerly functions of inspection frequently reduces them to elements of production.

Classes of Inspection. When one attempts to classify inspection in terms of centralized or decentralized inspection one is almost bound to conclude that centralized inspection is becoming rapidly obsolete. However, thinking of inspection in its broader sense, should it not be classified as follows?

Product inspection.

Raw materials (purchased items) inspection.

Equipment inspection.

Manufacturing methods inspection.

Fire and accident hazard and cleanliness inspection.

Inventory control status inspection.

Production control status inspection.

Waste elimination inspection.

Burden control inspection.

Employee welfare and labor turnover inspection.

Contribution to progress inspection.

As far as *product inspection* is concerned this subject has already been discussed. The inspection of *raw materials* is becoming increasingly more important. With the development of the chemical and metallurgical professions upon which so many of our industries are becoming increasingly dependent, inspection of raw material in a thoroughly scientific manner is already accepted as essential.

In many of our older industries, the extreme disregard for the condition in which raw material is received is almost appalling. It is true that quantities are usually carefully checked and in some cases quality specification also receives some attention. In many cases, however, management has not even attempted to define, or establish a set of specifications as to what it really desires in its raw material. A careful study of the physical and chemical characteristics of all raw materials, and the effect of these various characteristics on utilization and production will almost always result in manufacturing economies to an extent which cannot be visualized ahead of time.

Equipment inspection should include inspection of first items of product run after equipment is set up for a particular operation or product, assurance that the equipment is producing proper product, that the equipment is operating in as economical a manner as possible, that the speeds and feeds are not only up to the standard specified but that these speed and feed standards have been properly established and that no revision is desirable. Inspection of equipment should also include assurance that there will be maximum safety and minimum effort for the operators.

Manufacturing methods should also be periodically inspected. Determination should be made that operations are being performed according to properly established process standards. Consideration should be given to the question as to whether there is opportunity for revision and improvement of process standards. Labor effectuality should be estimated and again, here, opportunities for improvement evaluated. Inspection for fire and accident hazards and cleanliness should be periodic and frequent, not only for the purpose of preventing loss of plant or time of employees but also for the purpose of correcting the environment of the employee. This is of tremendous importance to efficiency.

Assuming that methods have already been established for properly *controlling inventory* in such a manner that interest on investment and inventories will be maintained at a minimum, the adequacy and effectiveness of such methods should be periodically checked and consideration given to possibilities for improvement.

Similarly, *production control methods* should be periodically inspected, reviewed and revised if desirable. Inspection of opportunities for *elimination of waste* at periodical intervals will be essential. Probably no business enterprise exists in which there have not occurred at times vigorous campaigns for the elimination of waste. However, too frequently such campaigns take the form of relatively infrequent drives. Periodic inspections at predetermined intervals for the purpose of assuring management that waste elimination is constantly receiving attention are important elements of the inspection function.

Application of burden must vary as conditions change. However, there is probably no more insidious malady affecting industry as a whole than the habitual continuation of unnecessary burden expense after the necessity for the particular item of burden in question has disappeared. Burden should receive its periodic inspection.

Employee welfare and labor turnover control methods should also be periodically inspected.

Last and perhaps most important of all, management should have periodic assurance that the enterprise which it administers is constantly showing *progress*. Probably the old saying that "It is impossible to stand still, one must go forward or backward" never had so true an application as it does in a manufacturing enterprise. A periodic inspection for the purpose of appraising the extent to which progress by the organization as a whole has been shown in the current period can be of inestimable worth.

Place of Inspection in the Organization Chart. The function of inspection has reached a fairly high stage of development, at least as far as published information is concerned, in only three industries, namely, ordinance manufacture, the machine tool industry, and the automotive industry. It is readily appreciated that all three of these industries are of the so-called engineering type. In other words, production is largely in accordance with blue prints or designs prepared by an engineering department. In these industries as well as in others, it is argued that one individual, for example, a production superintendent, should not be responsible for both quantity and quality, inasmuch as these two appear to oppose each other. The rapid growth of the importance of inspection in all industries; the more general application of inspection during the course of production for the purpose of reducing scrap material and consequently manufacturing cost; the development of mechanistic inspection methods; and the gradual realization that quality does not necessarily increase manufacturing cost, but in many cases reduces it, are all developments which tend to make it increasingly difficult to segregate inspection from production activities.

While it may be possible to establish as a general rule that final inspection should not be the function of production management, it is in a great many cases impractical to separate inspection during the course of manufacture from responsibility for production.

It is highly probable that responsibility for inspection methods employed should in practically every case rest with the executive whose function it is to direct efforts along lines of product design and development. Obviously the individual who is most capable of approving the design or construction of a product is most capable of judging when such a design or construction has been attained. Here again we have an instance where circumstances alter cases. The majority of industrial enterprises are not the mammoth organizations of which one so naturally thinks whenever the term industry is used. And in the case of the majority of business enterprises, it is believed that a somewhat different basis of separation of authority should prevail. The user of tools and implements is not ordinarily the most capable builder of such tools and implements. Methods after all are tools, inspection methods included. A production executive should be a capable user of methods and equipment. It is questionable whether ordinarily such an effective user of methods and equipment should be expected to be the designer or constructor of the methods and equipment which he may use. It would seem therefore that there should be one executive responsible for production, another executive responsible for product design, product equipment and method development, the latter executive being responsible for all of the various phases of inspection in addition to inspection for the control of quality as discussed in this article.

To expand this idea, it may be said in general that the production executive, or superintendent, should be responsible for the carrying out of methods prescribed by the head of a department of design and development, be he chief engineer, research engineer, chemist, designer, or what ever.

Standards of Quality. Confining ourselves again to the common scope of inspection, namely, that for control of quality, it is essential that standards which establish quality be understood. After all, quality is measured largely by, first, appearance, and second, serviceability. In the majority of manufactured products style is an important element, either in the product itself or in the container in which the product may be sold. Appearance may be made up of such items as uniformity of color, uniformity of shape, and any respect in which the product is measurable by any of the five senses. However, the extent to which the ultimate consumer is able to judge the various factors having to do with appearance is of importance. Long experience with a particular product such as that gained by workers, inspectors and executives, in a given enterprise, often develops an appreciation of variation in appearance entirely beyond that of the ultimate consumer. For instance, it is recalled that in connection with the inspection of a gold-plated clock wheel, which, when it reached the ultimate consumer, revolved at the rate of a few revolutions per hour entirely out of sight inside the case, it was carefully inspected with regard to the concentricity or eccentricity of a very small hub which made a part of the wheel. A considerable percentage of the wheels were rejected because of eccentricity of the surface of this hub, which eccentricity was only visible if the wheel were spun at considerable speed. Such wheels as were rejected for these slightly eccentric hub surfaces were replaced in a lathe and the hub turned down until it was exactly concentric, in the course of which operation the gold plating on this particular surface was of course removed. Due to the fact that the hub and wheel were mounted on a stainless steel shaft, it was impractical to replating the hub. After the foregoing repairing operation the wheels were then inspected and passed, although from the ultimate consumer's viewpoint the quality was less than it had been in the first place from the fact that the machined surface would eventually tarnish because the gold plating had been removed. At any of the operating speeds at which the wheel would ever turn the eccentricity of the hub was not discernible.

The limits of variation, or tolerances, as they may be called in many industries, for acceptable products should be determined from the point of view of variations beyond which the ultimate consumer can discern variation, or beyond which variation in serviceability can become measureable.

Another case is recalled where wooden boxes were rejected for variations from standard amounting to one thirty-second of an inch, where later investigation conclusively developed the fact that normal climatic changes would cause variations of three thirty-seconds of an inch. Still another case is recalled where minute defects in cloth resulted in sections containing the defects being cut out, thus making a larger number of lengths of cloth, a disadvantage in a subsequent process, during the course of which the cloth was covered with rubber so that the defects would have been made entirely invisible. Thus the long experience of the manufacturing personnel had

enabled them to recognize as defects things that in reality were not defects so far as the ultimate appearance and serviceability of the product were concerned. Only by testing the market should standards of quality which are to be established as limits for manufacturing be set up.

In this manner the manufacturer can be assured that he and his organization really appreciate what constitutes quality in their own products. When dimensional appearance or utility standards are established for the government of inspectors it should be ascertained that these limits have sound reasoning behind them.

Types of Inspection. As a means of controlling quality, accepted methods of inspection may be classified in the following groups:

- 100 per cent inspection.
- Random inspection.
- Final inspection.
- Work-in-process inspection.

The determination of the particular type of inspection to be used in a particular industry depends of course on that particular enterprise. In practically every case where 100 per cent inspection of a product, either in its semicompleted or final form is desirable, it should be possible to develop automatic mechanical inspection methods, which will not only locate items of product which do not come up to specification, but will reject them, and in some cases automatically adjust the equipment to eliminate further defects from the same cause.

For instance, we are told of a recent application of the photoelectric cell to a process in which printed wrapping material was being automatically placed around boxes. Variation in tensions or atmospheric conditions, or like causes, might result in improper registration of the printing on the completed package. A photoelectric cell was rigged automatically to check the registration of the printing on the package and make the necessary adjustment when the registrations were not correct.

The extent to which random inspection should approach 100 per cent inspection can only be determined by test. In some instances inspection of one-half of 1 per cent or less, of items manufactured may prove as effectual as necessity dictates. And in other cases much larger percentages must be inspected. It can only be said in this connection that the percentage of work to be inspected should be determined by analytical test and observation of results. There are relatively few products which do not require 100 per cent final inspection. The extent or thoroughness of this final inspection may vary to a considerable degree. However, a majority of industries pay employees in relation to percentage of good work produced, and even if this were not the case, it is certainly true that workers in general take pride in doing good work.

Knowledge that management knows of the quality of the work produced adds interest to the task of the worker, and even were quality not essential as an aid to sales and distribution, it is probable that in the majority of cases the moral effect of inspection and resulting quality would be worthwhile.

As pointed out previously, work-in-process inspection is rapidly becoming more general in industry and is essential in those cases where workers are paid on the basis of good work produced and in those cases where mass, line, or progress production, or production on automatic or semiautomatic equipment is handled.

Control of Dimensional Quality. The limited extent to which gages have been used in manufacturing operations as a whole and the crudeness of those gages which are in use, especially outside the so-called engineering industries, is illustrative of the general lack of appreciation in regard to the extent to which accuracy and uniformity can aid production and reduce manufacturing costs.

Multiplying and dial gages are used relatively infrequently, and the large number of individuals engaged in manufacturing precision items of product who are unable to use a micrometer makes one wonder how mass production has ever made the progress that it has.

The use of microprojection equipment and stroboscopic equipment is relatively new. When determination of accuracy is a real problem these fields should be thoroughly investigated.

Having determined to what extent accuracy is desired and the limits and tolerances of such accuracy through investigation of the consumer's requirements in this regard, and then having provided means whereby readily to gage the product within the prescribed limits, the control of dimensional quality rests much more largely with the inspector of set-ups or first pieces produced, than it does with the operating crew.

Enforcement of Quality Standards. Frequently we encounter among manufacturing executives the complaint that it is difficult to maintain quality standards among workers. An alibi often offered in this regard is that workers are paid an incentive for high production and therefore cannot be expected to produce high-grade work. Such reasoning is fallacious.

As a matter of fact the real difficulty in enforcing standards of quality is the lack of understanding and appreciation of what constitutes quality. So long as inspection is to remain a matter of opinion of a too often dyspeptic inspector, such a lack of appreciation and understanding is bound to continue. The inspection task which cannot be standardized, defined and described in understandable English will usually be found to involve theoretical, impractical and unreasonable measures of quality which have no actual utility, and do not add to product salability or to consumer acceptance.

Workers do like to do good work, and, provided what constitutes good work is intelligently explained to them, the enforcement of quality standards disappears as a difficult task. While it is natural for workers to enjoy producing quality products, it is also essential that an incentive be offered them whereby their income will be improved as quality improves. Thus continued progress along this line will be assured.

Reduction of Scrap. Perhaps one of the greatest opportunities for improving the profit-producing capacity of an enterprise, as a result of inspection, arises from the possibility on the part of inspectors of observing instances where scrap and waste material may be reduced or eliminated. In giving consideration to the accuracy of a product for its particular purpose, the

inspector should also give consideration to the material from which it is produced and to opportunities for reducing the waste which occur in the conversion of the raw material to the finished product. He should divide waste into avoidable and unavoidable waste, and see to it that management is advised of all possibilities for reducing the cost and the amount of material required to produce a given item.

The roving, or work in process, inspector has a fertile field for adding to profits through recognizing his responsibility for being at the necessary points in the manufacturing establishment at the proper time to prevent production of defective work which will later result in scrap. After all, an inspector is in such a position that his perspective should be much better than that of the individual engaged in production.

Team work between inspectors and producers constitutes the only way in which a manufacturing enterprise can be truly and continuously successful. The inspector with a chip on his shoulder and a scowl on his brow is, or at least should be, a thing of the past.

CHAPTER XI

OPERATING DATA FOR LINE OFFICIALS

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Manufacturing Costs. Business men generally and industrialists in particular are in accord with the necessity for accurate and prompt knowledge concerning the costs of their operations. However, there is a considerable divergence of opinion as to the methods to be used in the preparation of data and in the presentation and interpretation of the information compiled.

The primary requisites of a satisfactory cost method are:

1. Truthful and accurate reflection of the cost of the various activities.
2. Simplicity and clarity.
3. Promptness.
4. Economy of operation.
5. Suitable comparisons.

A criticism of accounting procedure using job costs is that such information has been largely historical only. The general use of costs of this character has been valuable by providing an experience out of which in recent years there has grown a great improvement. It is generally accepted by the best authorities that some form of standards is essential. These take the form of predetermined measuring sticks of various kinds, such as standards for the cost of materials, direct labor, overheads, etc., as well as budgets of finance, construction, sales, and production.

The greatest value to be secured in the use of these modern standards arises from the psychological effect produced upon the personnel of the organization, particularly the line officials. It makes them cost conscious. The very fact that when properly organized the department heads and executives must give thought to the preparation in advance of suitable standards is sufficient to make them all think about their problems. This is highly desirable. Foremen and executives when first faced with the necessity of establishing standards frequently find it difficult. Like many other things practice makes perfect and it will be found that the solution of the problems lies in the actual doing of the job.

Formerly it has been the opinion of many that standard costs could be applied successfully only to those industries making a standard product with highly repetitive operations. Latterly skill and experience have proved that any and all manufacturing operations may use standards successfully.

Standard Costs. This, then, sets forth some of the principles and procedures necessary for the establishment of a standard cost system. The executive when giving thought to the selection of a method to be used in his enterprise must consider the advantages to be gained in the adoption of a standard cost plan over any other method. It is not a mere compilation of figures prepared in the accounting department after the fact and full of mystery to others. It is a method which provides every department head in advance with accurate allowances showing him the limits to which he can go safely in authorizing expenditures. It shows what the product ought to

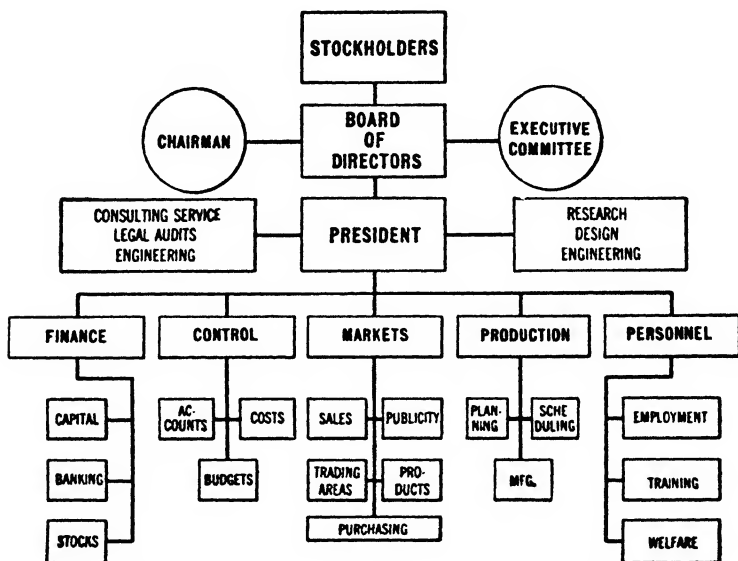


FIG. 1.—Executive organization and functions.

cost in detail and separates the cost of inefficiency of operation, thereby pointing out weaknesses to be attacked and the direction required for intelligent cost reduction. Probably the most important report for executive attention is a statement of variations from standard cost.

Organization of Personnel. One of the first steps is to establish the lines of authority and responsibility for the various departments which are to be recognized by the grouping of the personnel. An organization chart is extremely helpful. The idea is definitely to recognize each department activity usually in line with the functions which it performs. Such a chart would show the executive in charge, usually a president or general manager, with his primary subordinate officials not too many in number. Such might be vice president in charge of production, vice president in charge of sales,

vice president in charge of research or engineering, comptroller, and personnel manager. Under each of these heads the operating departments would be indicated such as divisional sales managers, advertising, manufacturing, operating departments and contributory or service activities such as office, receiving and stores, shipping, etc.

It is essential to departmentize activities, using the most natural arrangement, either by locations, functions, or authorities. Always a department must be composed, not alone of groups of equipment or space, but also of persons, in charge of a definite, responsible head.

An example is given herewith:

PRODUCTION			
(Operating)			
No.	Department		
.11	Cutting		
.21	Dividing		
.31	Binding		
.41	Sewing, 8th floor		
.51	Sewing, 7th floor		
.61	Pressing		
CONTRIBUTORY			
Control		Marketing	
No.	Dept.	No.	Dept.
960	General Office	.91	Distribution Exp. %
964	Tabulating	.911	Salesmen's Samples
.965	Stenographic	.92	Distribution Exp. Units
966	Calculating	.922	Stock and Shipping
.968	Accounting	.925	N. Y. Selling Office
.969	Credits and Collection	93	Design
		.94	Publicity
		.95	Order Handling
		.97	Buying
Personnel		Production	
No.	Dept.	No.	Dept.
.983	Employment	.90	General Burden
.984	Health and Safety	.901	Plan-Study-Schedule
.985	Cafeteria	.902	Maintenance
.987	Training		

FIG. 2.—Departments.

It is a good idea to show on such a chart primarily the line of authority extending to all department heads. A supplementary record of responsibilities and duties in narrative form is desirable. The personnel within each department is better indicated on separate typed sheets instead of attempting to include those in minor positions on the chart. A further useful tool is a separate record of the routine procedures for major activities.

The importance of a study of organization and the definite establishment of departments and authorities cannot be minimized. If successful standard costs are expected these are essential. By this means a control of all the activities is made possible because the responsibility both for the establishment of the original standards and the comparisons of actual costs is placed upon the head of the department or activity.

[illegible]

FIG. 3.—Perpetual inventories.

Setting Standards. It should be recognized at the outset that the job of setting standards is really a process of engineering rather than of accounting. The standards must be complete covering all departments and all cost elements of the products made or handled. The procedure requires a review of all available cost and statistical data over a period of three years, if possible, together with a survey of ways and means to determine the lowest possible cost for each element consistent with the quality and service requirements of the business.

When all of the standards are approved they should be introduced into the statistical records in a manner facilitating comparison by totals and items with the actual costs. However, it should not be inferred that the actual cost of jobs processed is necessary. On the contrary, the comparisons are made of elements, activities and departments.

Raw Material Standards. It is impossible to control the costs of materials and supplies without a segregation of these materials in a specially prepared physical space for which a storekeeper is definitely responsible. The receipt, storage and issuance must be governed by properly designed simple forms capable of recording all movements. There must also be a perpetual inventory carefully itemized upon which proper records are preserved.

For each of the items two standards are necessary. First, a standard price per unit and second, a standard usage factor for each of the products to be manufactured. These standards are to be a part of the perpetual inventory record so that when materials are purchased or used a compilation can be made for each accounting period not only of the actual cost of materials and supplies used, but of the variation from standard as well. In some industries it is possible to use standards of price and quantity of materials over a long period of years. In others it is necessary to review and revise the standards annually or semi-annually. Whenever such revisions are made, it is necessary to make a corresponding adjustment of inventory values for the financial records.

The standards of price of materials should be set as near as is possible to the probable actual costs for the approaching period. The standards for quantity or use should be determined by careful analysis of product requirements. This frequently requires an engineering study often resulting in a change in design. The objective is to determine the lowest possible consumption per unit of product to be used as a measuring stick of the efficiency of operations affecting materials. It is not necessary to provide standards either of price or quantity for supplies of indirect items since it is better to determine variations in these costs as expenses. It is necessary to provide such standards for all direct materials to be figured as such in the cost calculations.

Direct Labor Standards. The accepted and approved method of determining the cost of direct labor is by complete analysis of operations and adequate elemental time and motion study. It is essential to organize a time study or standards department with a competent engineer in charge, preferably responsible to the comptroller. In a simple proposition this might even be a part time job or combined with the cost analysis work but for complicated processes or large operations, a real department is necessary. In any event, the careful setting of labor standards will save many times its cost.

First, it is necessary to determine the character of basic data which will be required from which time calculations can be made for any of the products of the enterprise. In a machine shop this would take the form of tables and curves indicating time allowances for all of the machine tools for various feeds, speeds and cuts. Similar tables would cover bench and hand operations.

In assembly departments, the classification of similar products can usually be employed for establishing working tables.

In the manufacture of apparel, similar tables of basic data would indicate the time required for the various operations in the cutting department, such as spreading, marking, cutting, and bundling. In departments using sewing machines, the data would indicate the number and character of seams and the lineal inches of sewing required for the various classes of the product.

In all cases, regardless of the industry, it has been found possible to establish accurately the allowable time limits in such a manner by elements that it is possible and practicable to analyze the products into their time elements.

Operator <i>Jules Hennelton</i>		No. <i>1111</i>		Operation <i>Seam binding</i>		Operation No. <i>435</i>	
Av. Piece Work Earn-5 Wks.		Efficiency % <i>15</i>		Machine <i>111</i> Speed <i>1400</i>		Study No. <i>1</i>	
Observer <i>Arthur</i>				Equipment <i>111</i>		Date <i>4-10-29</i>	
No. Pieces <i>24</i>		Size <i>B</i>		Conditions <i>Standard</i>			
Kind of Material <i>Leif pure Embroidered</i>							
Operation Group		Price					
100% Synthetic Time		Calculations					
Standard Delay							

CLOCK TIME	DESCRIPTION OF ELEMENT	NUMBER OF OBSERVATION										OR	RUN	LAPSE	TOTAL	PERCENT	THAT	WAS	SELECTED	
		1	2	3	4	5	6	7	8	9	10									
	A Span bundle strings used in on belt																			
	B Seam bind skirt																			
	waist back																			
	C Seam bind skirt																			
	waist front																			
	D Old apart																			
	B Seam bind skirt																			
	waist back																			
	C Seam bind skirt																			
	waist front																			
	D Old apart																			
4:50	E Put up bundle																			

FIG. 4.—Time study.

Such time limits, usually referred to as standard allowed hours, are readily converted into dollar and cent values by the use of occupational base money rates per hour. Such rates would vary with the market price of labor and the experience and skill required for performing the operation. These occupational rates would also be standardized. In use, the standard allowed hours either as such or converted into money values are used for the determination of the standard cost of direct labor as well as for measuring the efficiency of the operations as performed daily.

One of the most important functions of a foreman in charge of an operating productive department is to observe at frequent intervals the efficiency of each of the operations in his department. By means of a simple calculation

of the standard time or money allowed compared with the actual time or money expended, the variation in cost of direct labor is disclosed. It is desirable that a daily and weekly report should be used for this purpose. It will be seen, therefore, that with this sort of control there is no further necessity for compiling the cost of direct labor since the standard cost of labor is used in all cost calculations and the amount of the variations shows immediately the departure from standard.

For the accounting department a complete analysis of all labor both by weeks and for the accounting period of a month or otherwise is required indicating the different departments with the standard direct labor, actual direct labor, variations as well as the cost of indirect labor analyzed as may be necessary.

Manufacturing Expense (Burden) Standards. It has always been necessary to use some sort of standard for the purpose of application or absorption of manufacturing burden. It is therefore not required that an extended explanation should be made. There are various bases or plans all of which are proper when applied to a situation which fits that particular plan. All of these plans are necessarily arbitrary in character. There are two important essentials: first, the requirement that a reasonably accurate portion of the overhead shall be applied to and absorbed by each of the various products manufactured and, second, that the standards, budgets and accounting for actual expenses shall be set up by departments following the line authorities and responsibilities as established in the organization chart. This must be done regardless of whether the burden rates are by department or not.

Probably the most accurate basis for burden application is by standard hours of direct labor since the whole matter of burden expense is one of elapsed time or hours. In many instances it is entirely satisfactory to use a percentage of the labor cost. This is especially true in industries involving simple operations or low burden expenses. Some authorities advocate the use of machine hour rather than man hour rates, especially for cost centers involving the use of intricate and expensive equipment.

Whatever the basis employed, the items should be classified into fixed charges and controllable or partly controllable expenses.

An essential feature is an expense budget prepared for each department, both operating and contributory, as well as for the general items not applicable to departments. The procedure is to establish a normal point of production for each department expressed in standard allowed man hours, machine hours or direct labor standard cost according to the basis used and for each of the items of expense and allowance for the cost of that item at the normal point of production.

It is further desirable to provide for each department a curve on a graphic chart either for the department as a whole or for the fixed or controllable items separately or for each item if desirable, indicating the amount of allowed expenses at various points of production, both below and above normal.

The accounting department should arrange its distribution records in such a way that the actual costs for each item and for each department will be available for each accounting period so that a report may be prepared

TABLE I.—EXAMPLE OF COMPARATIVE DEPARTMENTAL REPORT
Department Sewing 8th Floor

No 41.

Controllable items	Original budget	Current month, June 1930			10 months to date		
	Normal maximum capacity	75 % budget	Actual	Index No.	90 % budget	Actual	Index No.
Sundry items, 9300	\$ 25	\$ 19	\$ 22		\$ 225	245	
Repairs product, 93031	20	15	15		180	150	
Repairs, equipment, 93032	120	90	100	90	1,080	950	
Loss on rejects, 9304	20	15	12		180	275	
Indirect labor, 9320	320	240	225	107	2,880	3,100	93
Supplies miscellaneous, 93260	10	8	8		90	85	
Stationery, 93261	12	9	10		108	75	
Machinery parts, 93262	25	19	20		225	275	
Traveling exp, 9331	18	12	15		162	50	
Interest on inventory, 9346	85	64	70		765	700	
Insurance comp., 9351	20	15	18		180	170	
Light & power, 9355	70	52	60	87	630	610	103
Total controllable.....	745	558	575	97	6,705	6,685	101
Absorbed, 0.149.....			559			6,705	
Variation.....			(16)			20	
<i>Fixed items.....</i>			100 %				
Supervision, 93131	350		300			3,250	
Depreciation, 9341	175		175			1,750	
Rent, 9343	350		350			3,500	
Insurance, 9344	70		60			500	
Interest equipment, 9346	80		80			800	
Redistribution dept. 00.	250		230			2,000	
Total fixed.....	1,275	1,275	1,195	107	12,750	11,800	111
Variation.....			80			950	
Absorbed (\$0.255).....			1,275			12,750	
Idle capacity.....			956			11,475	
Total burden.....	2,020	1,833	1,770	104	19,455	18,485	105
Total standard, all hours	5,000		3,750	75		45,000	90
Burden per hour.....	\$0.404		\$0.49			\$0.41	
Total variation.....			64			970	
End efficiency.....				78			95

COMPARATIVE DEPARTMENTAL REPORT									
DEPT. <i>Canning Dept.</i> NO. <i>3</i>									
FLUCTUATING ITEMS	CLASS NO	%	MONTH OF		MONTHS TO DATE		MONTHS TO DATE		%
	93	OF	PLANT	ACTUAL	PLANT	ACTUAL	PLANT	ACTUAL	
MISCELLANEOUS	08								
REPAIRS EQUIPMENT	03								
LABOR ON REPAIRS	04			65.18		117.1		117.1	
ROYALTIES	06			6.20		117.1		117.1	
MISCELLANEOUS INDIRECT LABOR	130								
REPAIRS	135			67.1		117.1		117.1	
OVERTIME EXCESS	135			6.1		117.1		117.1	
REPAIRS PRODUCT LABOR	134			91.1		117.1		117.1	
REPAIRMENT & DESIGN	135								
SUPPLIES	36			92.1		117.1		117.1	
RAE	33			8.1		117.1		117.1	
COMPENSATION INSURANCE	3302			16.1		117.1		117.1	
INTEREST INVENTORIES	4512			10.1		117.1		117.1	
REDISTRIBUTED FROM:									
POWER & LIGHT	90311			76.1		117.1		117.1	
REPAIRS REPAIRS	9032			12.1		117.1		117.1	
CAPITEX	9033			7.1		117.1		117.1	
TOTAL ACTUAL FLUCTUATING				547.1		117.1		117.1	
TOTAL STANDARD FLUCTUATING		10		49.1		117.1		117.1	
FLUCTUATING VARIATION				117.1		117.1		117.1	
FIXED CHARGES									
94									
EXECUTIVE	11								
SUPERVISION	131			117.1		117.1		117.1	
FIRE INSURANCE	2501			1.1		117.1		117.1	
DEPRECIATION	447			67.1		117.1		117.1	
INTEREST EQUIPMENT	4512			11.1		117.1		117.1	
REDISTRIBUTED FROM:									
GENERAL BURDEN	90			94.1		117.1		117.1	
TRAINING	900			16.1		117.1		117.1	
HEAT	90212			18.1		117.1		117.1	
FLOOR SPACE	906			117.1		117.1		117.1	
INDUSTRIAL RELATIONS	906			117.1		117.1		117.1	
TOTAL ACTUAL FIXED				117.1		117.1		117.1	
FIXED VARIATION				117.1		117.1		117.1	
TOTAL STANDARD FIXED				117.1		117.1		117.1	
FIXED ASSORBED		10		117.1		117.1		117.1	
IDEAL CAPACITY				117.1		117.1		117.1	
TOTAL VARIATION				117.1		117.1		117.1	
TOTAL ACTUAL BURDEN				117.1		117.1		117.1	
RATIO OF BURDEN TO STANDARD & L		10		117.1		117.1		117.1	
DIRECT LABOR									
ACTUAL				117.1		117.1		117.1	
STANDARD		100.0		117.1		117.1		117.1	
VARIATION				117.1		117.1		117.1	
PRODUCTION									
ACTUAL				117.1		117.1		117.1	
STANDARD				117.1		117.1		117.1	
VARIATION				117.1		117.1		117.1	
PER UNIT				117.1		117.1		117.1	

FIG. 5.

for use by the foremen and line executives indicating the variations from standards as well as the budgets and actual costs. These reports should be for the current period and cumulative throughout the fiscal year. By use of such a simple departmental report, the absorption of burden is indicated both for controllable items and for fixed charges as well as the efficiency of the use of the various expenditures.

Standards for Special Conditions. It is sometimes desirable to provide for the absorption of certain expenses in a specific way. An example is the

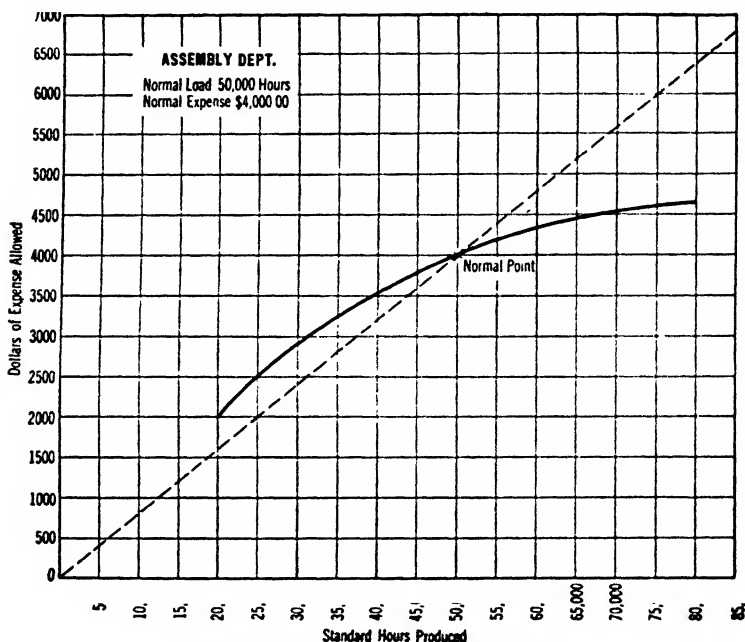


FIG. 6.—Curve for allowable expense.

cost of purchasing, transporting, storing, and handling materials. In some industries this item is of large importance and obviously has no relation to either the hours or cost of direct labor. The treatment would be to set up a department for material expenses. Standards would represent the cost per unit of quantity for the various classes of materials. The application in the costs is usually to figure the materials net with all discounts deducted adding the cost per unit for materials expense.

Distribution Expense Standards. In addition to providing standards for manufacturing costs, consideration must be given to the cost of distribution sometimes referred to as administrative and selling expenses.

Too little attention has been paid to this class of expenses in cost accounting. The all too common method is to use a percentage of selling price which added to the manufacturing cost is considered total cost. The better plan is to make a careful analysis of all expenses arising after the product is completed and ready for delivery, for the purpose of determining a more accurate basis for absorption. These expenses are usually handling, delivery, direct selling, branch office and home office general charges.

MARGIN %		DESCRIPTION	STYLE NOS.				PRICE			
GROSS	NET		MODEL	FUR	CLOTH	COLLAR				
DIRECT LABOR										
NAME OF OPERATION	OPEN NO.	FIRST ESTIMATE			STANDARD COST			STANDARD COST SUMMARY		
		MAN	W	SEC. COST	MAN	W	STD. COST	ITEM	FIRST ESTIMATE	STANDARD COST
Washing	1	1								
Cutting	1	2						Price Goods		
Marks & Coll Linings	1	2						Fare		
Marks for Collings	1	4						Findings		
Buttons & Button Ho	1	4								
Propping Lining	1	4						Direct Labor		
Propping Fur	1	2						Mfg. Burden		
Makes Under Collar	2	8						Total Mfg. Cost		
Makes Sleeves	2	8								
Makes Backs	2	10						Spec. (Mach. C.)		
Press Backs	2	11						Spec. Emp. Unit		
Collar & Iron Backs	2	12						" " "		
Makes Fronts	2	13						Total Cost		
Iron Backs	2	14								
Take Arm Hole & Sleeve	2	15						Gross Margin		
Press Edge	2	16						Net Margin		
Put Collar & Lining	2	17						MATERIALS		
Iron on Collar	2	18								
Trim Edge	2	19						CLOTH	LINING	
Hand Backs	2	20						MAN.	W	SECURITY
Handing Backs	2	21						MAN.	W	SECURITY
Under Press	2	22						Check		
Press Paper Facing	2	23						Flannel		
Extending	2	24						Lining		
Mark Collar	2	25						Trim		
Stretch Collar	2	26						Total		
Extending	2	27						Plus Expense		
Marks Lining	2	28						Total Price Goods		
Iron on Lining	2	29								
Iron Lining of Collar	2	30						Fare		
Take out Basting	2	31								
Top Press	2	32						Findings		
Press Lining	2	33						Thread		
Take Presses and Lining	2	34						Tags		
Put Sleeves	2	35						Buttons		
Put Bottom	2	36								
Press Bottom	2	37						Buttons		
Iron on Collar	2	38								
Bottoms, Double Sleeves	2	39						Total Findings		
Take on Fur	2	40								
Extending	2	41								
TOTAL DIRECT LABOR										
STANDARD SPECIFICATION & COST (Sketch on Reverse)										
		CLOTH			LINING					
		MAN.	W	SECURITY	MAN.	W	SECURITY			
								Check		
								Flannel		
								Lining		
								Trim		
								Total		
								Plus Expense		
								Total Price Goods		
								Fare		
								Findings		
								Thread		
								Tags		
								Buttons		
								Total Findings		

FIG. 7.—Standard specification and cost.

It is commonly possible to establish a secondary cost per unit of product to cover accurately a portion of these items leaving only such expenses to be absorbed as a percentage, as bear a direct relation to the selling price.

Cost Calculations. Instead of depending upon detailed calculations of the actual costs of the various elements determined after the process of manufacture is completed by means of expense ledgers, cost of materials, direct labor, etc., laboriously posted by jobs, the standard practice is to set

up a predetermined calculation on a suitably designed form for each of the products in much the same manner as is commonly used by many companies for estimating. There is, however, a very important difference because under standard cost procedure every item has been previously standardized on a definitely planned program.

For all accounting and statistical purposes the standard cost as calculated is used.

TABLE II.—SUMMARY REPORT OF TOTAL VARIATIONS*

Items showing variations	July, 1929		7 months to date	Grand total
<i>Materials</i>				
Binding material.....	\$ 86.76		\$ 1,396.22	
Piece-goods yardage.....	315.59		4,963.82	
Piece-goods purchase price.....	322.95		3,995.05	
Converting yardage.....	122.19		166.51	
Converting estimated price.....	479.38		700.35	
Actual converting price.....	156.69		134.25	
Material expense ordinary.....	1,294.84		8,787.27	
Material expense extraordinary.....	3,374.08		19,065.85	
Total piece goods.....		\$ 3,185.36		\$ 1,077.62
<i>Direct Labor</i>				
Cutting and dividing.....	15.22		1,255.06	
Sewing, 8th floor.....	38.38		10,638.33	
Sewing, 7th floor.....	1.92		5,435.16	
Coca Cola factory.....	2.30		552.92	
Total direct labor.....		18.84		15,351.35
<i>Burden</i>				
Cutting and dividing.....	1,579.64		11,631.55	
Binding.....	591.76		3,304.33	
Sewing, 8th floor.....	4,431.58		27,163.58	
Sewing, 7th floor.....	2,126.26		13,407.44	
Pressing and folding.....	875.18		7,754.26	
Coca Cola factory.....	2,344.33		8,254.12	
Total burden.....		11,746.73		71,415.08
Total manufacturing cost.....		14,951.03		85,668.81
<i>Distribution Expense</i>				
Distribution expense per cent.....	15,560.27		8,644.78	
Distribution expense per dozen.....	10,295.92		4,727.03	
Designing department.....	3,787.96		12,998.67	
Total distribution expense.....		29,644.16		8,626.86
Grand total variations.....		44,595.15		94,315.67
Reflected in earnings statement.....		44,595.15		94,315.67
Portion unabsorbed.....		0		0

* Roman figures, gain; Italics, loss.

Variations from Standard Cost. In actual operation standards are never precisely paralleled by actual cost. This difference is called variation. Variations occur in all elements of cost and may be either variation gain or variation loss. The standards are set at the point of normal efficient operation. The aim of the executive line officers should always be to secure a variation gain. If operations are at standard or indicate a variation gain there is positive evidence of satisfactory operation. Variation losses must be diligently pursued in consultation with the department head directly responsible.

The accounting set up is arranged to follow precisely the organization chart. One of the most important reports for the executives is the statement of variations from standard costs prepared for inclusion in the monthly or periodic accounting reports.

In the accounting the disposition of the variations may be used either as a correction of the standard cost of sales or be passed to profit and loss. The former is the best practice since it makes it possible to operate the general ledger, balance sheet, and earnings statement on actual costs, while the statistical records and inventories are carried at standard costs in detail.

The Accounting Procedure

The costs must be tied into the financial records in order that complete statistical reports may be available and satisfactory control be assured.

The whole plan for the accounting is presented under four main headings which comprise all of the important functions:

1. Control.
2. Analysis.
3. Informative reports.
4. Comparison.

Under each of these headings descriptions and exhibits will serve to set forth the methods employed to secure the desired results.

The purpose of these methods is to serve as a tool of management definitely aimed toward the stabilization or increase of profits. To this end the reports are to be presented to department heads at frequent intervals for discussion, conference and decision leading to corrective action for cost reduction and other improvements.

Control. The control of all expenditures, assets and liabilities is accomplished by a definitely planned chart of accounts each of which is represented in the general ledger by a controlling account and further by means of the setting up of departments, budgets, and standards.

General Ledger. The function of each of the various general ledger accounts is to control the subsidiary records and to provide the data from which the balance sheet is prepared for each accounting period.

While these accounts have the common function of control, each has some special purpose. "Cash in banks" controls receipts and disbursements regardless of the number of separate banks used. "Accounts receivable" controls individual debtors account. "Inventories" controls the detailed

record of stores, goods in process and finished goods. "Plant" controls plant and property ledger which also carries details of depreciation. In a

The function of the general ledger is control, while that of the voucher distribution is complete analysis. The arrangement shown with the use of decimal classification greatly simplifies the whole accounting and budget procedure.

Classification numbers are coded on all vouchers with vouchers covering all possible transactions in line with the following outline.

The first and second digits to left of all numbers govern general ledger accounts exclusively; following to the right digits three, four, and five represent further classes; then comes a decimal point indicating that the department number follows after the point, thus: 9311.93—93 to the left indicates general ledger account Expense #93, 11 indicates Executive Salaries, and .93 Design Department, covering (A) General Ledger Control, (B) Complete Analysis of Voucher Distribution, and (C) Departmental Expense Control.

General Ledger Accounts

1 CASH AND BOOK ASSETS	6 CURRENT DEBTS
11 Cash in Bank	61 Notes Payable
12 Petty Cash	62 Accounts Payable
14 Accounts Receivable	63 Salesmen's Compensation
15 Reserve for Deductions	Accrued
16 Personal Accounts	64 Bonuses Accrued
18 Notes Receivable	65 Dividends Declared Unpaid
	66 Pay Roll Accrued
2 INVENTORIES	67 Local Taxes Accrued
20 Inventories, Stores, Process, and Finished	68 Federal Income Taxes
3 INVESTMENTS	7 RESERVES
31 Marketable Securities	71 Reserve for Current Federal Tax
32 Call Loans	72 Reserve for Inventory Losses
34 Subsidiaries	
4 PLANT AND PROPERTY	8 CAPITAL
41 Land	81 Capital Stock Preferred
42 Buildings	82 Capital Stock Common
43 Equipment	83 Surplus
48 Reserve for Depreciation etc., Buildings	9 OPERATING
49 Reserve for Depreciation etc., equipment	91 Profit and Loss
	92 Interest on Investment
	93 Expense
5 DEFERRED CHARGES	97 Sales
51 Insurance Unexpired	
52 Prepaid Interest	
53 Drawings for Advances	

FIG. 9. —Chart of accounts. (Decimal Classifications.)

similar manner the entire set of accounting and statistical records falls under the general ledger controls thus provided.

Voucher Distribution

Any of the foregoing control accounts may be further arranged in detail. Examples are given for Inventories #20 and Expense #93.

20 Inventories

211	Skeined Yarn	26	Indirect Supplies
212	Coned Yarn	261	Stationery
222	Cut production knit	262	Oil, etc.
223	Woven goods	263	Dyes & Chemicals
240	Findings	264	Coal
241	Thread	265	Shipping Supplies
242	Elastic	271	In Process
25	Transit Goods	281	Finished Goods

93 Expense

930	Miscellaneous	934	FIXED CHARGES
9300	Sundry Items	9341	Depreciation
9301	Advertising	9342	Taxes Local
9302	Office Expense	93431	Rent (Space)
93031	Repairs to Product	93432	Rent Equipment
93032	Repairs to Equipment	9344	Insurance
9304	Loss on Rejected Product	9345	Protection
9305	Loss on Samples	9346	Interest on Investment
9306	Entertaining		
		935	PUBLIC SERVICE
931	WAGES AND SALARIES	9351	Insurance
9311	Executive	9352	Tel. & Tel.
93120	Indirect Labor Misc.	9353	Legal & Professional
93121	Factory Supervision	9354	Water
93132	Factory Watchmen, Porters	9355	Light & Power
93133	Factory Technical		
93135	Salesmen	936	DELIVERY
		9361	Freight
9326	SUPPLIES FROM INVENTORIES	9362	Express
93260	Miscellaneous	9363	Cartage
93261	Stationery	93641	Parcel Port
93262	Machine Parts	93642	Parcel Post Billed
93263	Dyes & Chemicals	9365	Trucking
93264	Coal	9366	Transportation of Returns
93265	Shipping Supplies		
		937	DEDUCTIONS
933	TRAVELING	9371	Discount Allowed
9331	Executive	9372	Credit & Collection
9332	Buying	9373	Bad Debts
9333	Selling	9374	Exchange
938	SUNDRY GAINS (Current Expense)		
9381	Waste sold		
9382	Gain on Materials Sold		
9383	Labor		

Fig. 10.—Chart of accounts

Only the minimum number of both accounts and entries should be permitted in the general ledger.

Each accounting period, usually consisting of one calendar month, is treated precisely the same. Therefore, statements and reports reflecting complete information both as to operations and financial condition, are prepared with no details omitted. The standard monthly closing journal entry is exceedingly simple, usually consisting of five or six items only.

An interesting feature of simplification is that only one ledger account, "inventories" is required for the control of this asset. The details properly analyzed should appear on one of the informative reports planned for this purpose.

In a like manner, only one general ledger account is employed for all expense items "expense," of which the detail is fully covered by means of completely planned departmental analyses based on a chart of expense distribution and reflected in the various statements prepared for executive use.

The benefits derived through planned control, budgets, and standards covering financing, earnings, cash requirements, departmental responsibilities, materials, direct labor, and expenses are considerable.

Analysis. The plan of the accounting is to pass all authorizations for expenditures as well as other required entries including the summaries of the books of original entry, through the accounts payable or voucher records. The only exceptions are the few closing entries for which definitely planned closing journal entries are used. By this means a complete record of all items affecting the various departmental activities is automatically secured without further reanalysis. If tabulating machines are available they may be economically employed, otherwise the best method is individual cards, one for each distribution classification.

Classification symbols are helpful and may be so planned on a decimal classification as to tie in with the general ledger controls and departmental requirements. This makes it possible to apply suitable code numbers on all vouchers, a practice which facilitates rapid entry.

Four forms of vouchers are commonly used; vendors invoices, a credit voucher for use when no invoice is available, a debit voucher for contra entries to be made in red ink and a journal voucher for transfers.

Authorizations for expenditures originate from department heads in the form of requisitions on the purchasing department for materials and expenses while labor expenditure authorizations arise from the pay-roll analysis. When the audit of these authorizations indicates vouchering has been completed entry is made upon the distribution record. Standard journal vouchers are prepared periodically for all required prorrations such as depreciation, insurance expired, taxes absorbed, interest and for summary of books of original entry such as cash received, cash paid, sales analysis, etc.

This plan should be so complete that subsequent reanalysis is unnecessary. Any account which has to be analyzed afterward was not planned rightly in the first place.

Informative Reports. Complete information on every phase of the enterprise is reflected by means of reports and schedules. Direct labor should be reported daily indicating for each department the efficiency of the depart-

TABLE III.—MOVEMENT OF INVENTORIES
July, 1929

May, 1929

	On hand July 1, 1929	Charges	Credits	On hand July 31, 1929	Turnover velocity times per year	
					July, 1929	Past twelve months
Raw Material at Actual Cost						
Piece goods.....	\$109,223.78	\$113,076.69	\$ 97,610.64	\$125,289.83	10.0	13.1
Notions.....	12,517.39	8,593.67	6,158.17	14,952.89	5.4	7.3
In transit.....	27,361.05	99,228.29	109,517.68	17,071.66		
Supplies.....	9,498.65	1,834.50	1,677.59	9,655.56		
Total raw material.....	158,600.87	223,333.15	214,964.08	166,969.94	15.9	12.5
Work in Process at Standard Cost						
Material expense.....		5,998.75				
Piece goods.....	37,098.81	98,936.17	53,286.45	88,747.28	10.0	23.7
Notions.....	389.75	5,310.38	2,952.27	1,968.36	44.9	23.8
Direct labor.....	1,820.00	26,117.42	15,534.25	12,403.17	26.2	78.4
Burden.....	781.45	18,818.60	11,397.55	8,202.50	30.4	113.8
Total at standard.....	39,310.51	155,181.32	83,170.52	111,321.31		
Variation reserve.....		14,951.03	14,951.03			
Total work in process, at actual.....	39,310.51	170,132.35	98,121.55	111,321.31	15.6	31.6

Finished Goods at Standard Cost						
Salesmen's samples	3,407.59	5,080.92	977.86	7,510.65		
Job 1333	690.34	65.61	1,809.70	2,434.43		
Close outs and damaged garments	692.70	2,010.09	2,420.00	282.79		
Finished goods	60,238.15	75,902.70	76,896.82	59,244.03		
Transferred to retail store	63,648.10	83,059.32	82,104.38	64,603.04		
	9,266.94	2,832.49		12,099.43		
Total finished goods at standard	54,381.16	80,226.83	82,104.38	52,503.61		
Variation reserve		14,951.08	14,951.03			
Total finished goods at actual	54,381.16	95,177.86	97,055.41	52,503.61	21.8	26.3
Total	252,292.54	488,643.36	410,141.04	330,794.86		
Retail Store at Actual Cost						
Remnants	1,541.73	1,375.49	1,499.40	1,417.82		
Notions	297.68	4.08	34.18	327.08		
Samples (from designing)	164.68	414.28	308.60	270.36		
Garments	817.45	1,829.47	1,822.46	824.46		
Total retail store at actual	2,226.28	3,623.92	3,664.64	2,185.56	20.0	18.7
Grand total	\$254,518.82	\$492,267.28	\$413,805.68	\$332,980.42	3.1	8.3

TABLE IV.—ANALYSIS OF SALES, GROSS MARGINS AND NET PROFITS
January 1, 1929 to July 31, 1929

Class of sales	Num- ber dozen total shipped	Per cent of total dozen	Value of returns	Per cent of total returns to net ship- ments	Net shipments	Per cent of volume		Standard gross margin	Per cent stand- ard gross margin to net ship- ments	Manufac- turing varia- tions loss ap- plied to shipments	Distribu- tion expenses actual	Ratio of distribu- tion ex- penses actual to net ship- ments	Net gain on trading actual	Ratios	
														To total net gain	Net gain to net ship- ments
Total.....	79,178	100.0	\$89,868.81	5.0	\$1,785,737.59	100.0	100.0	\$633,982.05	35.5	\$85,698.81	\$431,916.00	24.2	\$116,347.24	100.0	6.6
	14,900	18.8	2,882.61	3.2	115,555.59	6.5	5.4	34,382.05	29.8	5,166.30	26,665.81	23.0	2,549.94	2.2	2.2
\$ 5.50	949	1.2	183.61	0.2	5,020.59	0.3	0.4	2,313.05	46.1	162.81	1,431.54	28.5	718.67	0.6	14.2
6.50	1,373	1.7	348.00	0.4	8,486.00	0.5	0.5	3,262.00	38.4	322.82	2,312.26	27.2	626.92	0.5	7.4
6.75	35	0	2.00	0.0	218.00	0.0	0.0	55.00	25.2	1.65	45.85	21.0	7.52	0.0	3.2
8.00	10,283	13.0	1,491.00	1.6	80,779.00	4.5	3.7	23,521.00	29.1	3,659.42	17,237.26	21.3	2,654.32	2.3	3.3
10.00	245	0.3	128.00	0.1	1,915.00	0.1	0.0	190.00	9.9	191.35	494.58	25.2	485.91	0.4	25.3
12.00	2,013	2.6	740.00	0.9	19,137.00	1.1	0.8	5,041.00	26.3	858.26	5,154.32	26.9	871.68	0.8	6.1
Smocks.	5,819	7.3	5,119.00	5.7	115,031.00	6.4	5.1	32,103.00	27.9	6,667.72	29,537.78	25.6	5,102.60	2.7	2.7
Total.....	2,386	3.0	1,391.00	1.5	37,632.00	2.1	1.5	9,193.00	24.4	1,470.82	8,352.60	22.2	680.42	0.5	1.7
\$15.75	52	0.1	58.00	0.0	766.00	0.0	0.0	307.00	40.0	25.62	150.77	19.3	132.61	0.1	17.0
16.50	2,324	2.9	1,333.00	1.5	36,866.00	2.1	1.5	8,898.00	24.1	1,447.20	8,201.83	22.3	765.05	0.6	2.1
Total.....	3,216	4.0	3,710.00	4.2	70,918.00	4.0	3.2	20,588.00	29.0	3,504.44	17,867.20	25.2	685.64	0.6	0.8
\$22.50	145	0.2	38.00	0.0	3,230.00	0.2	0.2	1,205.00	37.3	465.62	1,502.21	46.5	762.83	0.7	25.6
24.00	3,071	3.8	3,672.00	4.2	67,683.00	3.8	3.0	19,383.00	28.6	2,858.82	16,364.99	24.2	1,791.90	0.2	0.3
Total.....	3,217	0.3	18.00	0.0	6,481.00	0.3	0.4	2,322.00	35.8	892.46	3,317.98	51.2	1,868.44	1.7	29.1
\$30.00	217	0.3	15.00	0.0	6,481.00	0.3	0.4	2,322.00	35.8	892.46	3,317.98	51.2	1,868.44	1.7	29.1
Apron frocks	35,321	44.7	26,739.00	29.8	658,723.00	36.9	37.3	236,503.00	33.9	56,661.84	164,976.59	25.0	34,844.57	30.0	5.3
Total.....	18,010	22.8	9,069.00	10.1	280,605.00	15.8	15.0	95,026.00	33.8	16,766.78	75,554.88	26.9	2,684.34	2.3	1.0
\$15.00	513	0.6	240.00	0.3	7,123.00	0.4	0.4	2,444.00	34.3	577.65	2,060.08	28.9	76.29	0.0	1.1
15.75	5,334	6.8	2,823.00	3.2	78,914.00	4.4	4.2	26,839.00	34.0	5,871.44	20,744.54	26.0	2,223.02	1.9	2.8
16.50	11,011	13.9	5,688.00	6.4	174,171.00	9.8	9.4	59,061.00	33.9	11,488.05	46,936.37	27.0	636.58	0.6	0.4

17.00	103	0.1	35.00	0.0	1,716.00	0.1	0.1	695.00	40.5	77.56	393.11	22.9	224.33	0.2	13.5
17.50	76	0.1	36.00	0.0	1,269.00	0.1	0.0	398.00	31.3	19.68	243.64	19.1	184.68	0.1	10.1
18.00	773	1.0	216.00	0.2	13,539.00	0.8	0.7	4,251.00	31.4	469.87	3,275.39	24.2	506.24	0.5	3.7
19.50	200	0.3	31.00	0.0	3,873.00	0.2	0.2	1,338.00	34.5	655.05	1,901.75	49.1	1,116.80	1.0	28.7
Total	17,311	21.9	17,670.00	19.7	378,118.00	21.1	22.3	141,477.00	37.4	19,895.06	89,421.71	23.7	32,160.23	27.7	8.5
\$22.50	5,400	6.9	5,950.00	6.6	113,259.00	6.3	6.9	43,493.00	38.4	7,545.88	30,095.14	26.6	5,851.98	5.0	5.2
24.00	11,338	14.6	11,707.00	13.1	257,773.00	14.4	15.0	95,276.00	36.9	11,917.21	57,354.85	22.3	26,009.91	22.4	1.0
25.50	233	0.3	13.00	0.0	5,729.00	0.3	0.4	2,323.00	40.5	251.12	1,429.23	24.9	642.65	0.6	11.2
27.00	50	0.1	1,357.00	0.1	1,357.00	0.1	0.0	385.00	28.4	186.82	542.49	33.9	514.31	0.5	25.3
Dresses	8,076	10.2	11,543.00	12.8	229,769.00	12.8	13.9	87,879.00	33.3	6,804.45	53,252.67	23.1	27,821.90	23.9	12.1
\$30.00	7,703	9.7	9,292.00	10.3	217,616.00	12.1	13.0	82,610.00	38.0	6,246.63	49,814.69	22.9	26,548.68	22.8	12.2
33.00	11	0.0	17.00	0.0	231.00	0.0	0.0	29.00	12.5	2.75	51.08	22.1	44.83	0.0	10.4
39.00	362	0.5	2,234.00	2.5	11,822.00	0.7	0.9	5,240.00	43.9	555.05	3,386.90	23.4	1,293.05	1.1	10.9
Dresses	12,568	13.8	42,018.00	46.8	642,517.00	36.0	38.5	244,625.00	33.1	29,725.95	151,055.05	23.5	63,844.00	54.9	9.9
\$45.00	6,546	8.3	13,162.00	14.6	278,126.00	15.6	16.9	107,088.00	38.5	14,804.24	64,114.87	23.1	23,168.89	24.2	10.1
54.00	562	0.7	2,274.00	2.5	26,770.00	1.5	1.6	10,603.00	39.4	1,063.60	7,318.54	27.3	2,215.86	1.9	8.2
60.00	1,360	1.7	5,245.00	5.8	76,026.00	4.3	4.8	30,348.00	39.9	1,691.25	15,147.55	19.9	13,209.22	11.3	17.3
66.00	1,782	2.3	8,209.00	9.1	106,002.00	5.9	5.9	37,163.00	35.0	5,873.66	23,588.47	22.3	7,690.87	6.6	7.3
72.00	568	0.7	3,313.00	3.7	37,490.00	2.1	2.5	16,022.00	42.7	1,117.68	8,359.10	22.2	6,245.32	5.4	16.6
78.00	1,477	1.9	8,057.00	9.0	102,168.00	5.7	6.1	38,670.00	37.9	2,656.44	27,133.44	25.5	8,680.12	7.4	8.5
81.00	126	0.2	956.00	1.1	8,080.00	0.5	0.3	2,162.00	26.8	639.06	2,634.07	32.8	1,091.15	0.9	13.6
90.00	6	0.0	245.00	0.3	250.00	0.0	0.0	94.00	37.6	2.97	69.60	27.8	21.43	0.0	8.6
96.00	44	0.0	246.00	0.4	3,831.00	0.2	0.2	1,305.00	34.0	257.67	1,853.84	43.4	1,036.41	0.9	28.3
108.00	37	0.0	211.00	0.3	3,684.00	0.2	0.2	1,170.00	31.5	584.60	775.57	21.0	1,901.17	0.1	6.2
Miscellaneous	2,554	3.2	1,567.00	1.7	24,142.00	1.4	0.2	1,540.00	6.4	1,612.57	6,428.10	26.6	9,610.67	8.5	59.8
Closets and damaged garments in Salesmen's room	1,191	1.5	1,537.00	1.7	14,212.00	0.8	0.8	1,486.00	10.6	880.89	4,175.81	29.3	6,542.70	5.6	46.0
Job 1333	141	0.2	30.00	0.0	2,728.00	0.2	0.0	216.00	7.9	240.65	570.28	20.8	594.95	0.6	21.8
	1,222	1.5			7,202.00	0.4	0.0	270.00	5.7	521.08	1,682.01	23.3	2,475.04	2.8	54.3

ment in relation to normal or budgeted operation as well as the variation from standard cost by operations. This data should be accumulated in a weekly report and for the accounting period.

The manufacturing expense burden as well as the distribution expenses, administrative and selling, are completely indicated by the comparative departmental report compiled for each accounting period and cumulatively to date for the fiscal year for each department separately and by means of a summary showing departmental totals only.

The subject of inventories should be covered by a report indicating the movement of all inventories and subsidiary to the general ledger controlling account Inventories. This report should be arranged in three sections, namely, stores, goods in process, and finished goods. Each of these sections should be further analyzed to break down the inventories into proper items each of which would control subsidiary records covered in the perpetual inventory in detail. For example, the goods in process would be analyzed into materials, direct labor, and burden, at least. This report would also show the values at the beginning of the period, charges, credits and the balance at the end of the period as well as the rate of annual turnover for the period and for the past twelve months.

The stores section may be carried at actual costs, or at standard as preferred, but the goods in process and finished goods section must be at standard cost for all items. The credit to finished goods, namely, the cost of sales, is corrected from standard to actual by means of the variations on standard manufacturing cost.

A statement of the analysis of sales, gross margins, distribution expenses and net profits is desirable arranged in such a manner for each period as to reflect the above items by branches, classified products, salesmen, etc. The study of such a report often discloses hidden losses or opportunities for increasing profits.

A statement of plant and property analyzed into land, buildings, and equipment showing original values, additions, and depreciation is helpful.

The usual statements of financial condition such as the balance sheet and earnings reflect the figures on the actual cost basis disregarding all standards.

Finally a statement of variations from standard costs summarizing both manufacturing and distribution departmental activities is essential.

Budgets

Budgets and standards are often confused. While they have a distinct relation to each other they are different in character. Standards are measuring sticks set up in detail for the purpose of controlling the various cost elements and determining variations. Budgets, excepting in governmental affairs, are not appropriations for expenditures but are a means provided for the purpose of making the entire organization think about its job in advance. There should be provision for budgets of sales, production, finance, construction, research and expense. Budgets should be compiled by means of conferences composed of the personnel which is best informed about

the particular subject. They must be coordinated with the other activities, subjected to the accounting knowledge of the comptroller's department, reviewed by the high executive and finally adopted by mutual agreement.

Referring to the production budget in particular, it should be established on the basis of normal production reflecting both the normal point of production, usually expressed in standard allowed hours, and the various expenses both controllable and fixed, allowable at the normal point of production. The relation between the standard expenses and the budgeted production establishes the burden rate. Separating this rate into two parts respectively for the controllable and fixed items provides first, for the control of the actual controllable expenses and second, for indicating the idle capacity of the plant due to under absorption of fixed charges.

The normal point of production should be established for manufacturing operations without regard to the volume of sales quota. The function of the sales department is to produce a satisfactory volume to utilize the existing facilities or to indicate by a larger quota the desirability of a construction program. If the sales volume falls below the normal point of production thereby reducing operations to less than normal, the cost of unabsorbed fixed charges should be considered as idle capacity and charged to profit and loss as a responsibility of management.

Incentives. During recent years the value of the incentive plans for the compensation of labor is being definitely recognized. One of the advantages of the use of standards and budgets with the resulting variations is that almost no additional statistical detail is required for the preparation of suitable incentive plans either for direct labor, primary executives, or key men. In fact when incentives are desired, it is usually necessary to establish budgets and standards substantially as outlined before such plans can be installed.

Expense of Operation. Economy is just as essential in office and clerical work as elsewhere. The simplification of cost accounting and statistical reports through the use of budgets and standards leads to the greatest economy of operation possible. Direct methods are employed throughout and many unnecessary details are eliminated. The principle of the use of exceptions prevails. Standards are carefully thought out and applied in such a way that if no variation losses are indicated, satisfactory operation of the enterprise is assured.

CHAPTER XII

PURCHASING

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Importance of Purchasing. During the last decade there has been a steadily increasing pressure on industrial management to reduce production costs. Competition within an industry itself and the development of substitute products are the incentives for this urge.

The efforts of management in solving these problems have, during the last decade, been devoted largely to problems of production and distribution.

By production is meant the processing of the raw materials after they have been received in the plant. So far as the development and improvement of labor and machinery are concerned, scientific management has without question been quite successful.

But a study of the distribution of use of the average dollar of gross receipts in industry will reveal that this effort has been concerned with roughly 17 per cent of industry's expense, while an item of roughly 57 per cent has been largely neglected.

In industry as a whole, 57 cents of the manufacturer's dollar is spent for materials, 17 cents for wages, and the remaining item of 26 cents goes for overhead, interest, taxes, and profit.

FIG. 1.—Manufacturer's dollar. Average division of industrial receipts computed from data of Census Bureau.

These figures, shown in Fig. 1, are derived from data collected and published by the United States Census Bureau. Obviously, therefore, purchasing is a phase of management which requires thorough study and efficient performance. The importance of proper purchasing is emphasized by the fact that gross sales must be increased \$10, on

¹ Compiled from "Scientific Purchasing," by permission of the authors, Edward T. Gushée and L. F. Boffey, and the publishers, McGraw-Hill Book Company, Inc.

the basis of average profits, to compensate for each dollar of waste in purchasing.

Management has unquestionably lagged in its appreciation of purchasing and has not tried to apply to it the principles of efficiency which have revolutionized production. It has watched and carefully controlled the expenditure of 43 cents of each dollar of production cost which goes to labor, administration, overhead, interest, taxes, and profit and has succeeded, on the whole, in getting full value for that expenditure. It has given only cursory attention to the 57 cents of each production dollar which is spent for materials, and in consequence it has allowed—and in many industries still allows—a large portion of that amount to be wasted.

Some far sighted companies have recognized purchasing as a major function and are developing their purchasing organizations along scientific lines. So little concerted study has been given to purchasing, however, that there are virtually no data, based on the actual experience of other organizations, which can be referred to in building up a purchasing organization. From this standpoint, it may well be asserted that scientific purchasing is in the same nebulous state which characterized scientific production a decade ago.

The full development and advantages of scientific purchasing cannot be attained by individual effort. They can be attained only by universal understanding and application of the principles which govern sound purchasing. This is true, because materials pass through many hands and manufacturing processes before they reach the ultimate consumer. The finished product of one manufacturer is raw material for another. If only a single manufacturer in the chain uses scientific methods of purchasing, the resultant saving is trifling in comparison with the saving which might be made by the application of scientific purchasing to all in the chain.

Principles Applicable to Large and Small Organizations. The discussion and conclusions that follow are equally applicable to the small as well as to the large organization. In a small organization the purchasing department might properly consist of a purchasing agent and two or three assistants while in a large organization the purchasing function might be handled by a director of purchases assisted by a staff numbering a hundred or more persons.

Functions. But regardless of the size of the organization, the purchasing function, properly organized, consists of the following:

1. Administration.
2. Buying and follow-up.
3. Accounting.
4. Inspection and material study.
5. Economics.
6. Salvage disposal.

In some types of organizations traffic and stores, or either, may operate as a division of the purchasing department. Always there is a close relation of these two functions to purchasing.

Administration. Administration of the department is obviously the function of the purchasing agent. He must supervise all the divisions, keeping in close touch with the work of each. He should approve all major requis-

tions before they are passed to the buying division; approve the award of all major contracts and orders; decide all questions of policy in dealing with other departments of the company and with the public; maintain close contact with the executive, operating, and engineering officials of the company; conduct negotiations with sellers on all important purchases; and adjust differences which arise in the performance of contract.

Order Division. The order division, comprising the buying and follow-up groups of the department, should come under the direct jurisdiction of the purchasing agent's chief assistant. In small organizations the assistant himself will take over the major work connected with this division, keeping the purchasing agent fully advised of all important transactions and developments. In larger concerns the assistant purchasing agent will head, either directly or through the medium of another assistant or chief clerk, a staff of specialized buyers, each of whom handles the purchase of one or a related group of commodities.

The grouping of commodities, for the purpose of specialized buying, will vary according to the manufacturing requirements or operations of the company, but for purposes of illustration the following are indicated:

1. Iron and steel products.
2. Non-ferrous metal products.
3. Textiles and chemicals.
4. Lumber and wood products.
5. Mechanical equipment and supplies.
6. Electrical equipment and supplies.
7. Paper, printing, office equipment, and supplies.
8. Maintenance material and supplies.
9. Miscellaneous.

This grouping is wholly suppositious, and the obvious plan to follow is a divisional arrangement that will insure competent and thorough supervision of purchases in all markets from which the company's requirements are drawn.

The size of the company and the magnitude of its operations will control the number of workers in each of the buying groups. There can be no uniformity on this point, as one buyer may need several assistants to fulfil his duties, while another may require only the part-time service of a stenographer.

Putting the order division in charge of the assistant purchasing agent provides the individual control which is necessary for best results. His supervision will insure that all the buyers follow the same fundamental practice and will establish proper authority for stabilizing the departmental load when one buyer is overcrowded with important negotiations. The assistant purchasing agent will be the point of contact between the buyers and the purchasing agent and will assume the responsibility for the routine of the division, bringing before the purchasing agent all special problems connected with ordering and follow-up which require the latter's personal attention.

The follow-up of orders may or may not be assigned to a special subdivision of the department, depending on the volume of orders issued. Where a subdivision is necessary, it should be recognized as part of the order division. The follow-up clerks should report to and receive instructions from the buyers. The buyer is in the best position to know the relative importance of

delivery on each of the orders he issues, the period normally required for manufacture and transportation, the best method of expediting in cases of emergency, and the steps to be taken if the source of supply falls down in a particular transaction. Even more important is the psychological effect of the buyer's supervision of the follow-up of his orders. He knows and is known by the sales representatives of the concerns from which the goods are ordered, and he can get individual and special attention in urgent cases, where a routine follow-up might be ignored or casually treated. It is a fundamental of purchase organization that the follow-up work shall come under the jurisdiction of the buyers.

Economics Division. The economics division is an extremely important part of the purchasing organization. Broadly, the function of this department is to maintain all records relating to the prices of products, to study materials and markets, to analyze the prices paid for commodities and equipment, and generally to point the way to savings through more intelligent specifications and supervision of sources of supply. This division or its equivalent is essential for every purchasing department which expects to make major savings. Economy in purchasing is not a matter of selecting the lowest of a number of bids, but of knowing that the material bought is adapted for requirements, efficiently produced, and bought at a price which represents a fair profit to the seller.

It is desirable that the head of the economics division of the purchasing department shall be a commercial economist. He must have a thorough grasp of the conditions which affect supply and prices, and the ability to present those conditions in text and graphic form for quick visualization by the purchasing agent and the buyers. Even the comparatively small concern, provided it has a volume of buying sufficient to justify rudimentary centralization, should provide the purchasing agent with an assistant who is competent to handle the economic work of the department. Without such provision, the purchasing of the company will follow rule of thumb rather than scientific lines.

Accounting Division. The accounting division of the department will have as its primary duty the checking of all invoices, verifying the prices charged, insuring that all discounts, allowances, and earned concessions are shown on the bills, and arranging for adjustments for overshipments, erroneous charges, and defective or improper material. The work of this division should come under the supervision of a chief clerk.

Inspection Division. As its name indicates, the primary function of the inspection division is to determine that all materials and equipment delivered are in strict conformity with the specifications. The name inspection, however, does not imply the full functions of the division. It should also be charged with responsibility for the initiation, maintenance, and revision of specifications and standards; and likewise, with responsibility for the investigation of new materials and new sources. All of the efforts of the purchasing organization in building up adequate specifications and purchasing to them will be minimized if no attempt is made to determine that actual deliveries conform to the specifications and this determination is, of course, the primary function of the inspection division.

Salvage Division. The last of the major divisions of the purchasing department has for its function the salvage and disposal of scrap material. The sale of scrap or obsolete equipment is almost invariably assigned to the purchasing department, but in most instances the function is indifferently handled. The tendency is to regard any recovery, no matter how small, as so much "velvet" and the accepted method is to invite a scrap dealer to make an offer for the available material and to accept whatever he deigns to bid. Where this procedure is followed, much material which could be adapted or converted to the company's own use is literally thrown away and other material is sold for an inconsequential sum because the advantages of reasonable sorting and classifying are ignored. The salvage division of the purchasing department can save large sums for the company by using reasonable care and proper methods in its work.

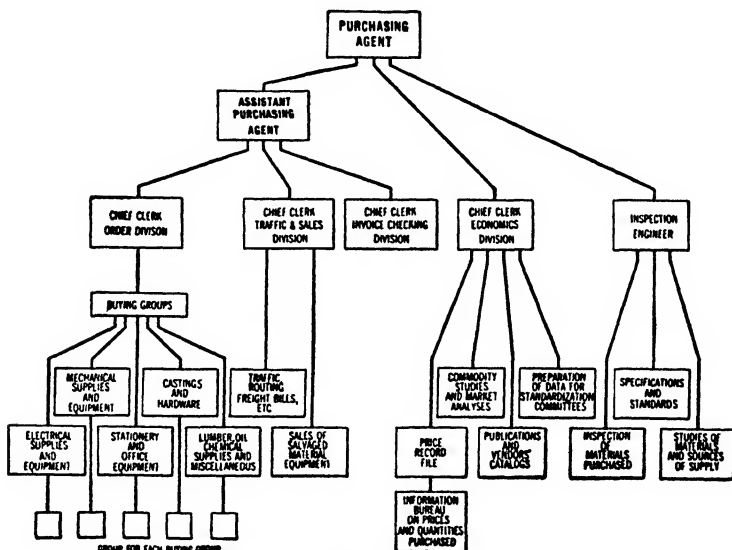


FIG. 2.

Stores and Traffic. Two other functions may or may not be regarded as divisional parts of the purchasing organization. These are stores and traffic. The question as to whether the purchasing agent should supervise these functions is a moot one; there are apparently convincing arguments to be expressed on both sides of the question. The arguments are convincing, however, only in relation to the particular organization for which they are advanced. The question is really one to be settled as an individual company policy. For the purpose of this discussion, the point as to whether the purchasing agent should directly supervise stores and traffic is not important.

The important thing is that the relation of purchasing to stores and traffic must be intimate. The intimate relation can be maintained, however, by heading stores and traffic with responsible officials whose authority over their own department parallels that of the purchasing agent over the purchasing department, just as readily as it can be maintained by having stores and traffic operate as divisions of the purchasing department.

A typical plan of organization is illustrated. This form of organization is applicable to a concern with a large volume of purchasing. It can be added to or modified, however, to cover the needs of a particular concern, because it follows essentially the outline given in this chapter.

Basic Principles. The following principles govern the organization and activities of a purchasing department if it is properly to function as a component part of an industrial organization.

1. Centralization.
2. Personnel.
3. Records.
4. Coordination.
5. Know what you buy.
6. Standards and specifications.
7. Fair dealing.

First Principle, Centralization. It is impossible for real economy to be attained in the purchase and utilization of materials if the administrative officers, the production staff, the sales department, and the engineers all dabble at the process of buying. The function of purchasing must be assigned to a thoroughly competent individual whose responsibility and authority must be recognized both within and without his organization, and to whom must be given the cooperation of other departments and the encouragement, guidance, and especially the undivided backing of the executives of the company. He should be held responsible for results, and not hampered in the accomplishment of his duties.

True centralization of purchasing requires that the purchasing agent's authority and control of purchases shall be as absolute and definite as the treasurer's control of finances, the sales manager's control of sales, the plant manager's control of production, and the engineer's control of design.

Against this contention two arguments are frequently voiced. First, that the purchasing agent, as a type, is not equipped for such authority and control. The argument is weak. The type of purchasing agent who cannot adequately assume responsibility and properly exercise authority over purchasing has no place in the modern business organization.

The second argument is that a purchasing agent cannot be expected to possess such a fund of knowledge that he is sufficiently familiar with all materials and equipment in order to exercise the right of selection. As a matter of fact, the purchasing agent can, and should, have an intensive knowledge of what he buys, but it is admitted that arbitrary selection is not his prerogative. The argument, therefore, does not affect the principle of centralization.

In a broad sense, the determination of what to buy is not a purchasing function. For a purchasing agent to decide that brass instead of steel shall

be used for the composition of a particular part of the company's product, or that a milling machine instead of a shaper shall be purchased to round out the plant's mechanical equipment, or that oil shall be burned instead of coal, would obviously invest the purchasing department with duties and responsibilities that properly belong to production and engineering. The need and specification for goods arise outside the purchasing department and must be expressed before the purchasing department begins to function.

The direct interest of the purchasing department in the determination of what to buy has to do with the specifications for the goods. In the preparation of specifications the purchasing department should be consulted so that, as finally drawn, the specifications will allow for reasonable competition to be utilized and will stipulate standard sizes, items, and performance in preference to special requirements. Given such specifications, a purchasing agent should be competent to select from available sources of supply the one, or more, best fitted to provide the goods. If he does not possess that competence, he is not the right man for the job.

The argument that the department or individual which determines that a forging instead of a casting is to be used for a given purpose on the company's product should also determine the source from which the forging is to be purchased is fallacious. It is just as reasonable to argue that the designing division must control the production processes for the products it designs, the production division must handle the sale of the goods produced under its supervision, the sales division must control the money resulting from the sales it makes, or the financial division must determine what shall be paid for purchased goods because it controls the funds of the company.

The right of the requisitioning department to specify what is required should not be disputed by the purchasing staff, for the user or designer assumes the responsibility for performance if the specification is followed. This should not be interpreted as barring the purchasing department from all participation in the determination of what to buy. There are two inherent privileges which should be accorded the purchasing department in regard to specification: first, to ask questions; second, to make suggestions.

If a specification is unduly restrictive, narrowing the choice of sources of supply to a point which stifles competition or forces the bidders to quote high prices as a measure of protection against the severe stipulations, the privilege of questioning should always be exercised by the purchasing department. In the majority of cases this will lead to modifications, for users and designers have a definite interest in keeping down production and operating costs.

If the purchasing department, by virtue of its knowledge of materials, standard specifications, sources of production, manufacturing facilities, and economic conditions, considers that a specification should be revised along definite lines, it should suggest those revisions. The suggestions should be explicit, pointing out the advantages which will be gained if the revisions are made.

In substance, centralization of purchasing insures that all purchases shall be handled and consummated by the purchasing division; that the purchasing division shall be responsible for the procurement of materials or

equipment in conformity with specifications or in keeping with the requirements for which the goods are specified; that the selection of sources of supply shall be the function of the purchasing division; that while intermediate negotiations may be conducted between sales concerns and other departments of the buyer's company, such negotiations shall be with the knowledge and approval of the purchasing agent; that the consummation of all purchase transactions shall be left to the purchasing department, and—by no means least important—that these prerogatives of the purchasing department shall be understood and willingly adhered to by all other department heads and officials, without surrendering their own rightful functions.

Advantages of Centralization. Under these circumstances, centralized purchasing may and should achieve the following fundamental economies:

1. Center authority and responsibility for purchases, instead of dividing the responsibility among a variety of officials, many of whom lack the commercial instinct and economic knowledge necessary for proficient buying.
2. Permit commodity standards to be set for all using departments, thus curtailing the number of items that must be carried in stores and releasing much capital that would be tied up if each using department bought and carried its own reserve supplies.
3. Combine the requirements of all using departments, thus permitting purchases to be made in large volume with consequent savings of large amounts by reason of lower unit prices.
4. Eliminate waste and extravagance through the maintenance of records to show the normal rate and frequency of consumption for commodities, thus providing a check against excess consumption.
5. Enable purchases to be made when conditions are most favorable, by means of market study and analysis which will indicate when the time is propitious for buying.
6. Establish sound specifications, by means of records, research, engineering counsel, and cooperation of using departments, to insure that the quality of materials purchased shall be precisely adapted to requirements.
7. Analyze the prices paid for materials, thereby inspiring the utmost economy in production by manufacturing vendors, eliminating excess profits, assuring a fair margin to suppliers, and securing value for the company's expenditures for materials.
8. Encourage the development of manufacturing methods and substitute commodities which will pave the way to economies in the purchase and use of materials.
9. Simplify and expedite inspection and approval of materials, and accounting and payment of bills.

The first step in the application of scientific purchasing, therefore, is to centralize the purchasing function.

Second Principle, Adequate Personnel. Until recently the unwisdom which characterized the attitude of many industrial executives toward the function of purchasing inclined them to consider that no special training or qualifications were required for the purchasing agent. The errors of omission and commission made by an inexperienced and unqualified purchasing agent may and frequently do cause tremendous financial losses. Stand-

ards by which a purchasing agent should be judged are (1) absolute honesty, (2) a sound conception of engineering and manufacturing processes, (3) ability to reason calmly and logically, (4) executive ability, (5) ability to deal with men, and (6) comprehensive knowledge of economics.

Third Principle, Adequate Records. The third principle concerns the preparation and maintenance of adequate records. A purchasing department may be said to attain perfection when it buys the right quality of material, in the right volume, at the right time, from the right source, at the right price. As a corollary, data should be compiled which will in general indicate (1) what to buy, (2) when to buy, (3) how much to buy, (4) where to buy, and (5) how much to pay. The possession and use of such data would not enable a purchasing agent to be infallible, because purchasing cannot be reduced to an exact science, but the lapses will be encountered less frequently than when hit-and-miss methods are relied upon.

Sources of Data. The sources of the purchase data which should be compiled in every purchasing department may be roughly divided into three classes:

First, data on the company's purchases, obtainable from the purchasing agent's own files, such as quantities purchased, dates of purchase, prices paid, quotations from unsuccessful bidders, and intimate information about sources of supply. These data originally must be prepared in some form or other for use in the ordinary routine work of the department. It remains for the data to be compiled and arranged in convenient form for ready reference and analysis. The task is important and usually difficult, but the results provide a great compensation for the time and expense involved.

Second, data on markets, including information on production, consumption, shipments, stocks and marked prices, volume of employment, wage rates, and activity in basic industries.

Third, data on materials, including a specification file; test reports; studies of materials; and information on the sources, supply, and uses of materials.

Fourth Principle, Coordination. The fourth principle is coordination. Coordination of the major units of an organization is essential for its commercial success. There are functions of the purchasing department which must not be usurped by other departments. Purchase negotiations with vendors must begin and end in the purchasing department. In the deliberations within the company as to the selection of materials, the purchasing department should have a voice and concur in the final decision, but its entire function should be coordinated with other departments so that the prerogatives of all may be respected.

A decision as to when to buy, based only on the economic studies of the purchasing department, may be incorrect from the viewpoint of the demands on the company's treasury. Only by considering all the facts can a proper decision be made.

It is the function of the production department economically to produce the product to be sold and as a corollary it can demand that the raw materials must be adaptable to economical production methods. One function of a real purchasing department is ever to be on the lookout for new materials

which will either reduce production costs or increase the quality of the product.

This means coordination of the two functions, and it can best be established by heading both departments with competent officials. The purchasing agent in relatively small concerns, and the specialized buyers in large corporations, must possess a thorough knowledge of manufacturing processes and the uses to which materials are put. The wider that knowledge, the more effective will be the service rendered by the purchasing department to the production staff.

Fully as important as the relation between purchasing and production is that of purchasing and engineering. The function of the engineering department is to design, develop, and assume responsibility for the quality and performance of the products to be manufactured.

Coordination of purchasing and engineering is vital to the best interest of the business, yet in many organizations these two departments are constantly at issue, constantly working at cross-purposes. The engineer prepares specifications which are scientifically exact but which may be commercially impossible. He insists that they be followed to the letter and resents the effort of the purchasing department to modify the specifications in diction or in limitations so as to increase competition and reduce prices. In return, the purchasing agent scorns the scientific attitude of the engineer and sarcastically suggests that specifications be prepared with at least a smattering of attention to market conditions, standard sizes, and commercial practice.

It is certain that many current specifications are not commercially practicable. But the engineer is not wholly at fault for the deficiencies in his specifications. He is not expected to possess the commercial knowledge which is one of the purchasing agent's chief characteristics. Inadequate specifications bear testimony to the fact that engineering and purchasing are operated as separate units instead of as correlatives in the business organization.

Only by coordination can the technical skill of the engineer be combined with the commercial wisdom of the purchasing agent to produce specifications that will represent the greatest value in both performance and cost.

Fifth Principle, Know What You Buy. To be familiar with what he buys is one of the most important qualifications of a buyer.

Scientific purchasing reverses the old theory that the buyer is inherently at a disadvantage in dealing with the seller, because of the latter's superior knowledge of what he is selling. It requires the buyer to assume the aggressive instead of the defensive in negotiations, because it is his duty to specify what he requires, to find the right source for its production, to buy at the right price and at the right time. To accomplish this, the buyer must know all that can be reasonably learned about the materials he purchases.

Sixth Principle, Standardization. The sixth principle concerns material standards and specifications.

To illustrate the importance and possible results of standardization the following tabulation is given to show what was accomplished after what, in some cases, was a preliminary study of the situation.

Material	Variety and sizes before standardization	Variety and sizes after standardization
Paving brick.....	60	4
Files and rasps.....	1,351	454
Range boilers.....	130	13
Milk bottle caps.....	10	1
Reinforcing steel.....	66	11

In one particular company before a study was made eighty-eight sizes of conduit outlet boxes were used. In each size both black and galvanized boxes were used. After standardization, only six different sizes were used and they were all galvanized.

Using departments cannot be expected to requisition standard goods unless the standards are established and brought to their attention. From the standpoint of the using department, any material which can be obtained in the market is standard. Thus, the office manager who selects a desk from a catalogue, and the engineer who stipulates fifteen-sixteenth-inch steel bars for a particular manufacturing purpose both feel that they are specifying standard items because the purchasing department can procure both from stock.

But standardization involves much more than the selection of stock items.

In the storeroom of one large corporation a supply of four different brands of lubricating oil is maintained, all intended for the lubrication of the same type of machinery in different departments. Each brand represents the choice of a different requisitioning official. Three of the brands could, and should, be discarded, thus enabling the buyer to quadruple his volume of business to one source with consequent lower prices, and probably to cut the quantity of oil in storage to a quarter of what is carried. The same lack of standardization and the duplication of stores might be observed in hundreds of other items in that plant, and the condition is more or less characteristic of every manufacturing plant.

Specifications. Hand in hand with the principle of standardization is that of clear and definite specifications for goods to be purchased. This does not imply that a technical or engineering specification must be compiled for every item that is purchased, although, as will later be discussed, there is great need for more and better engineering specifications. Essentially, however, every requisition for goods to be purchased is a specification. Whether the item is a broom or a carload of lumber, a pin or a locomotive, the requisition issued to the purchasing department should convey a complete and intelligible description of what is wanted.

Importance of Specifications. Specifications are important from many angles. Some of the advantages of preparation of specifications and the use thereof may be listed as follows:

1. It enables the buyer to know the definite requirements of what he is buying.

2. It makes possible real inspection to determine whether correct quality of material is being furnished.

3. It brings up to all interested parties, buyer, designer and user, the question of whether a given material is not good enough or is too good for a particular use.

4. It widens the field of sources of supply, all vendors being able to bid on the same basis.

5. It reacts to the benefit of the manufacturer of good materials in that he knows he is not bidding against unfair competition, i.e., against some other manufacturer furnishing inferior material.

6. It interests the designing and operating engineers in the commercial variations in quality, the standard qualities available and the excess cost of variations from standard quality.

Preparation of Specifications. In preparing a specification file, different companies will approach the work in the manner best suited to their own requirements, but in every case it is advisable that one individual or group be made responsible for the specification file. In many instances the engineering corps is the logical source for such a file. Before any specification is finally decided upon, it should have the approval of the engineer, of the using department and the purchasing agent. If the company is of such size as to warrant a research department or a materials engineer, they also should approve specifications. Of course, standard specifications should be used when possible—such as government, A.E.S.C., A.S.T.M., etc.

A suggested method of organizing a specification file is outlined below. This is merely an outline as a guide to the fundamentals and will, of course, differ with various companies.

Anyone desiring a specification should proceed as follows:

1. Ascertain from the specification division, purchasing department, if the desired specification is in the approved file. If so, copies can be obtained at once.

2. If a specification has not been prepared the specification division will undertake to assist in the preparation of the desired specification or will write the specification, subject to approval of the department.

3. Before a specification is printed and filed its form and contents must be approved by the department or departments responsible for its application. Such approval shall be made in writing upon the final typewritten copy. Approval must be made by the department head or his duly authorized representative. The chief of the research department and the purchasing agent shall also approve all specifications.

4. The specification division is responsible for the printing of approved specifications and for the maintenance of the specification file.

5. The specification division is responsible for all proof reading and will see that the printed specifications are exact copies of the approved typewritten specifications.

It must be expressly understood that the department requisitioning material under a given specification is entirely responsible for the application of that specification to the job in hand.

6. *Revision.* Specifications are subject to revision whenever required to keep them up to date. The inspection division will see that such revisions

are made and for that purpose will circulate all specifications from time to time in the responsible department. The responsible department shall determine whether a specification requires revision or not.

a. If a specification does not require revision it will be approved by the responsible department in writing and returned to the inspection division for filing.

b. If the specification requires revision the responsible department will make such revision in writing and return the revised specification to the specification division for typing in the revised form. The procedure will then be as outlined above.

7. *Use.* When requesting quotations the purchasing department will send to the firms asked to quote a copy of the specifications covering the material under consideration. When order is placed this specification will be made a part of the formal order.

Inspection of material will be made to approved specifications. It will here be of interest to note what a specification should be. The following five points cover the question.

1. Should be specific.
2. Should accurately describe the material and its properties.
3. Should describe methods of inspection and testing.
4. Should be easily read and understood and worded as simply as is consistent with clear meaning.
5. Should adhere as closely as possible to nationally recognized standard specifications.

Not until standards are established for all equipment, materials, and supplies used in the plant, and not until clear and intelligible specifications are a requisite for every purchased item, can the full benefits and economies of scientific purchasing be realized.

Seventh Principle, Fair Dealing. The last principle concerns fair dealing with the supplier. An essential function of the purchasing department is the building up of dependable sources of supply. This can be accomplished more easily by having all of the relations with vendors characterized by a constant fairness. It should begin with the reception of salesmen. It should be prompt, courteous, and businesslike.

In negotiating with suppliers regarding a prospective order, fair dealing requires that strictly ethical methods be followed by the purchasing agent. To intimate to a salesman that his price is high when it is actually low, to introduce imaginary competition in order to coax an extra discount from the salesman, to misrepresent directly or by implication to bidders for the purpose of exacting concessions which would not otherwise be allowed—these are tactics which belong to the past era of buying. They may succeed now in isolated cases, but salesmen are quick to detect the haggling instinct in buyers, and when dealing with that type will in self-defense name initial prices which include a margin for bartering.

Fair dealing requires also that the buyer shall not take advantage of the seller when he knows that the latter has erroneously presented an estimate

which will mean a loss to him on the transaction. There are occasions when goods may be designedly and legitimately bought at less than the seller's cost of production. This is sometimes agreed upon between manufacturers and suppliers in industries selling direct to the public. The seller assumes the loss to have his goods established as "standard" by the manufacturer and makes his profit on replacement sales to the direct consumer.

In the general run of transactions, however, the buyer should expect the seller to make an adequate profit. That desire need not be altruistic; the experienced buyer is inherently shrewd and knows he must have dependable sources of supply. He knows, too, that a concern which makes no profit will not long continue as a source of supply.

A fair price, which permits the seller to make a reasonable profit on the basis of economical production and have funds available for development, is essential in modern business; not merely from the standpoint of the golden rule, but as a matter of self-interest to buyers as well as sellers.

Fair dealing also entitles the seller to know when and for what reason he has been unsuccessful in bidding on an order. There are sound reasons for not informing a bidder the price or terms which have been named by his competitor, but no possible harm or violation of ethics is risked by telling the unsuccessful concern that the price or quality or delivery of another supplier was more advantageous in the buyer's opinion.

Confidence and cooperation between those who buy and those who sell are an imperative need in industry. Fair dealing is a vital principle of scientific purchasing, for business relations to be sound must be on a basis that will leave both buyer and seller fully satisfied with the completed transaction.

Conclusions. Scientific purchasing points to many conclusions which present day management cannot afford to disregard.

First of these conclusions is the conception that buying must not be regarded as an incidental function which can be trusted to anybody and everybody. The successful purchasing agent of today is the product of a thorough and rigid course of training. His education in buying has been acquired in the school of experience. This education, however, has involved a roundabout course and a considerable expense to industry. For every purchasing agent who has attained reasonable proficiency and reasonable success in the past twenty years, there have been a dozen or more who have failed—costly sacrifices on the altar of industry to the false dogma that "anybody can buy."

For the future, management cannot afford to try out a dozen men to select one who is qualified to buy. It must choose and develop its purchasing agents with the same judgment and discretion that govern the choice of production, administrative, and sales executives. The attention now given to purchasing in the management courses of business schools and the special training which large corporations give to likely individuals in their own purchasing departments are indicative of the fact that the day of casual selection of purchasing agents has gone by.

Second, scientific purchasing will simplify the process of simplification in industry. The movements inaugurated by the Department of Commerce

to eliminate costly and unnecessary varieties, sizes, and styles of commodities will, when successful, establish savings of hundreds of millions of dollars a year to manufacturers and consumers. This saving can be realized only when it is fully comprehended, and the movements supported by industry. The path of progress for simplification runs parallel with the path for scientific purchasing.

Third, scientific purchasing will enhance the use of specifications in buying. The buyer will know what he buys. He will attach little value to proprietary names and trademarks, except as they represent actual quality and known ingredients in the goods they identify.

Fourth, scientific purchasing will establish an equitable relation between cost of production and selling price. The growing appreciation of price analysis in purchasing points to a great future development in this phase of buying.

Fifth, scientific purchasing will improve, and in some respects revolutionize, sales methods and sales organization. The itinerant peddler who sells carbon paper today and soap tomorrow will find little welcome in industry, nor will the "high-pressure" type of salesman. Selling, in the future, will resolve into an intelligent study of the buyer's problems, to determine how the seller's products and facilities can best be utilized by the buyer. The result may be fewer—but better—salesmen, with consequent reduction of sales costs.

Sixth, scientific purchasing will probably lead to some forms of cooperative buying. The extremely small manufacturer will never be able to employ specialists in purchasing, because the cost of this type of organization would be out of proportion to his expenditures. The tendency will be for him to allow his large customers to buy the raw materials and principal products which he uses directly or indirectly to make up their orders. Thus a large buyer, when contracting for coal or fuel oil, will include in his specifications the requirements for several of his small sources of supply. Each of the sources will get all of the advantages of the large buyer's organization, research and purchasing power. The same procedure will apply to metals and textiles and lumber and other major commodities. The application of this plan may be observed today in some quarters; its extension seems logical and certain.

Seventh, because scientific purchasing is founded on the correct interpretation of business trends it will help to stabilize business conditions. It will check the type of overbuying which tends to accelerate rising prices and encourage ill-advised expansion, and thus, it will moderate the severe reactions which come from overexpansion.

Finally, in summation: Management seeks to reduce production costs. It has gone far in that purpose by developing the machinery and methods of production and increasing the productivity of labor. The greatest possibility of further progress is found in scientific purchasing, i.e., in the proper expenditure of the 57 cents of the manufacturing dollar which is spent for materials. The concern which neglects that course will find it impossible to compete with organizations which apply the principles and methods of scientific purchasing.

It is not the individual concern only that will profit by this application. Scientific purchasing aims not for the lowest price but for the greatest ultimate economy in the purchase and utilization of materials. It strives to eliminate the waste which results from haphazard selection and inadequate methods of buying. Its universal application will lead to greater efficiency, greater economy, and hence, greater prosperity throughout all industry.

From this broad economic aspect, as well as from the standpoint of the individual concern which imperatively needs cost reduction to extend the market for its products, scientific purchasing is a phase of management which must be studied, comprehended, and applied. To neglect it means to be outdone, in the competitive race of industry, by those progressive concerns which grasp its advantages and reap its profits.

CHAPTER XIII

STORESKEEPING

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The functions of the stores department include generally:

1. Checking in and placing newly received items.
2. The systematic housing and safekeeping of parts and materials.
3. Disbursements under the authority of requisitions.

General Requirements. The department constitutes the connecting link between the production, or planning department, and the manufacturing departments. Therefore, the nature of the manufacturing processes has much to do in determining the particular methods to be used in connection with the housing and the handling of the materials.

Material items, or parts, fundamentally can be divided as follows: Either they are carried in stock or they are not; if they are not carried in stock they are either purchased to order or manufactured to order. The three divisions are sometimes designated as *S*, *P*, or *M*, respectively. The relative magnitudes of these three classes, together with the character of the materials or parts, largely determines what provisions may best be made for the housing and handling technique. Though the variations in these determining elements are many, nevertheless the fundamental principles of good stores-keeping practice are common to them all.

The position occupied by the stores department in the organization, that is, its place as the connecting link between the production, planning, or originating department and the manufacturing departments, makes it essential that the routine work conducted in it be in advance of the manufacturing routine.

It is not good practice to have productive workers coming to the stores department for materials while orders in process wait. The correct procedure is to have the materials for orders prepared in advance and moved into the manufacturing departments on schedule thus creating a forward pressure which tends automatically to urge production forward. This procedure logically makes the stores department a subsidiary under the planning, or originating department rather than under the manufacturing branch of the organization.

Centralized or Decentralized Stores. The locations of storerooms and the relative merits of centralized or decentralized stores depend largely on the nature of the productive processes. It is well to have the materials located conveniently near the manufacturing department concerned so that they may be transferred into production as quickly as possible. If there is to be any natural delay in the handling of the materials it is better to have

that delay occur in the beginning, when the materials are first placed into stores, rather than at the time when the materials are to be released for production.

However, if materials are heavy or bulky, and require special handling equipment, the stores department may have to be located near the receiving department. In such a case the manufacturing department utilizing such materials should be correspondingly located or the materials should be prepared in the stores department so they can be conveniently transferred to the manufacturing department. An illustration of this situation is the case of heavy bar stock, received directly into the stores department which is equipped with cut-off saws. The material is cut for production orders and transferred to the manufacturing department as required.

Factors Influencing Decentralization. In general, parts or materials used by only one manufacturing department are economically located if they are near the department using them. Such considerations as handling equipment, cost of storeskeeping labor or available space may make such an arrangement undesirable. Floor space is most valuable when it is productive. Therefore, as little space as possible should be taken up in the manufacturing departments for storing materials, and the materials which do get into the manufacturing department should all be for live orders, in economic quantities and kept on the move. Furthermore, it not infrequently happens that the storeskeeping activities required by any one manufacturing department are not sufficient to keep one employe efficiently occupied. In such cases, rather than combine the storeskeeping work with work of another character, it is well to centralize the stores and make the custody of them and their handling a specialty.

When it is found to be economical to decentralize some materials, as in the case of rod stock used in an automatic screw machine department, then the materials should be properly housed and protected, and disbursed preferably under the jurisdiction of the stores department. In that way the handling expense will be minimized without weakening the control.

Influence of Types of the Material. While the nature of the productive process has much to do with the problem of stores methods and facilities, the character of the materials themselves is also a determining factor. In general, the materials handled fall into seven classes as follows:

Stock Items.

1. Raw materials.
2. Rough castings.
3. Finished parts or units of materials.
4. Supplies and other expense materials.
5. Finished goods.

Non-stock Items.

6. Purchased-to-order items.
7. Manufactured-to-order items.

The last two of these classes represent items that are procured directly for particular production or shipping orders and therefore should move from the receiving department directly to the locations at which the various items required for these orders are being accumulated. They do not enter into the

regular storeskeeping routine as do the other items in the above list, as will be explained in a later paragraph on stock parts and finished goods.

Influence of Productive Processes. Although the first five of these classes are frequently carried under correspondingly distinct divisions of the inventory, with separate stores records, they may all come together in one store-room with the exception of finished goods, which should be segregated from the others. Bringing all classes of materials to one location often leads to difficulties because some relatively inexpensive parts or materials may move in small quantities to one manufacturing department and in large quantities to another, thus introducing widely different handling costs when requisitions have to be presented for the quantities drawn for each department. What is an economical quantity in one case is not an economical quantity in another case and this has considerable bearing on the centralization of stores.

Influence of Unit Costs and Lot Sizes. The productive, or direct, materials represented by raw materials, rough castings, and finished parts, as above listed, fall into eight categories depending on the relative magnitudes of the unit costs, the quantities in which the materials travel and the quantities in which they are carried in stores. Parts or materials of relatively small unit costs, moving in small quantities but stored in large quantities present a different problem than parts or materials of relatively small unit costs, moving in large quantities and stored in small quantities. This situation often exists in manufacturing plants including widely different types of assembly departments turning out large costly assemblies and small, inexpensive assemblies, yet using common parts.

The eight categories into which productive parts fall are:

1. Small unit cost, traveling in small quantities and stored in small quantities.
2. Small unit cost, traveling in small quantities and stored in large quantities.
3. Small unit cost, traveling in large quantities and stored in small quantities.
4. Small unit cost, traveling in large quantities and stored in large quantities.
5. Large unit cost, traveling in small quantities and stored in small quantities.
6. Large unit cost, traveling in small quantities and stored in large quantities.
7. Large unit cost, traveling in large quantities and stored in small quantities.
8. Large unit cost, traveling in large quantities and stored in large quantities.

If we let c represent the small unit cost, C the larger unit cost, q and Q the small and large quantities in which the parts or materials move into production and s and S the small and large quantities in which the parts or materials are stored, then these eight categories may be briefly represented as follows:

1. cqs .
2. cqS .

3. *cQs.*
4. *cQS.*
5. *Cqs.*
6. *CqS.*
7. *CQs.*
8. *CQS.*

A nut, washer, or stud, for example, used as a fastening part in one assembly department where only half a dozen may be required at a time, and which is stored in small quantities such as a gross, would fall into the *cqs* category. However, if the same part is to be used in another assembly department where it is required in large quantities at a time, then it may become necessary to store the part in large quantities whereupon the part falls into the *cQS* category.

This difference has much to do with the policy of centralizing stores because the law of diminishing returns requires that when the cost of making out a requisition and filling, pricing and posting it, becomes high in proportion to the value of the quantity of material covered by it, then some change should be made in the stores arrangement or methods. Decentralized substores departments may be created, the parts may be carried in small quantities in some productive departments where they are required in small quantities, or as described later under requisitioning according to the particular conditions.

Location Marking and Material Arrangement. Parts and materials used in productive routine are more quickly found and handled if their identification is reduced to code language through the use of a number. This is particularly desirable when the parts or materials are in frequent use, in diversified use or when the demand, as in the case of repair parts, depends upon positive and rapid identification.

The numbers assigned should cover no other function than mere identification of the item and once such an identification number has been assigned, it should not be changed nor should any other number be assigned to the item in another department, as long as the item itself does not change. This is important in connection with repair parts lists which sometimes show items under a series of numbers other than the original identifying numbers and which, therefore, impose the burden of interpretation before an incoming order can be transmitted to the stores department.

This principle applies also to the identifying of locations. Once a location is numbered, that number should not be changed unless some change is made in the location arrangement. In manufacturing practice it is not advisable to identify a location by marking it with the number of the part or the material stored in it. As a general rule the item should carry its own number and the location should bear its own independent number. An exception to this rule may be made in manufacturing establishments in which items purchased for stores, according to specific design, may be assigned identification numbers which correspond to their location numbers. An illustration of this type of item is labels used on rolls of roofing. The form number of the label may be made coincident with the location number without causing confusion in future orders or changes in design.

Types of Locations. Types of locations where materials or parts may be stored are:

1. Yards.
2. Floors.
3. Bays.
4. Stockrooms, storerooms, or vaults.
5. Racks.
6. Bins.

Particularly under centralized stores control, each different location should be identified by a number that should remain permanent as long as the location arrangement remains unchanged and regardless of what kind of material is stored in it. A cross-index should be maintained from which the location of any item may be quickly determined from the identification number of the item.

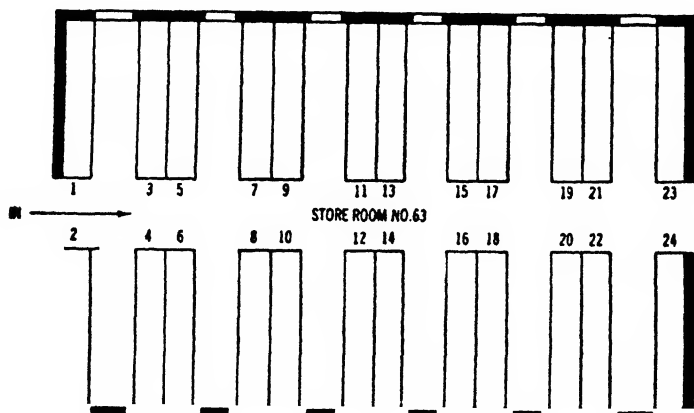


FIG. 1.—Representative storeroom layout.

As an illustration of good location numbering, the sequence in the number should follow the course of finding the location. First designate the store-room, for example, then the aisle, then the tier, and finally the bin. In Fig. 1 is shown a representative layout for a storeroom with locations numbered on this principle.

Bin Marking. Once having been established, the numbering system should be made uniform in principle throughout the establishment. The rows bins may be numbered and the tiers identified by letters, as illustrated Fig. 2. The letter A should be at the floor level.

Labeling. On the front of each bin, centrally located, there should be placed a bin label immediately above the bin number, this label being marked with the number and name of the part. It is sometimes convenient to

two lines on this label for two identifying numbers. An illustration of this is had in the case of finished parts made from castings which are also carried in stores because other finished parts, slightly different from the first, are also machined from the original casting. The labels for the rough-casting bins, if the castings are stored in bins, may be of a different color from those for

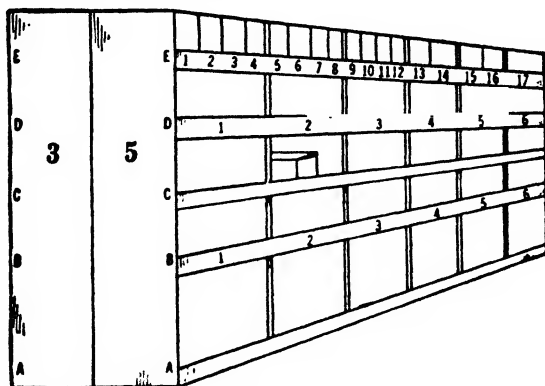


FIG. 2.—Representative tier and bin marking.

the finished-parts bins. Representative bin labels, illustrated in Fig. 3, indicate a finished part, No. *M-589*, which is machined from a rough casting, No. 31,064. The identification number of each of the specific items is featured on the label, the other number being given subordinate prominence.

Appropriate holders for this type of label are available on the market and, if not already on the bin fronts, as they sometimes are in the case of steel bins,

<p>PATTERN NO. 31064 CI</p> <p>DRAWING OR STOCK NO. M-589</p> <p>NAME THRUST COLLAR</p>	<p>PATTERN NO. 31064 CI</p> <p>DRAWING OR STOCK NO. M-589</p> <p>NAME THRUST COLLAR</p>
A	B

FIG. 3.—Representative bin labels. A, rough casting. B, finished part.

they should be permanently attached. The labels, on the other hand, should be made conveniently removable so that in the event of the material being transferred to another location, the corresponding label could be transferred at the same time.

Service and Surplus Stores. Compactness of the active part of a storeroom makes it desirable to limit the amount of material carried in the service bins. In such a case the excess, or surplus stores may be located at another place, away from the field of action. When surplus stores are so carried,

it is good practice to indicate the other location on the label of the service bin so that replenishments may be expeditiously made. If an appreciable number of items are in this category, with surpluses carried elsewhere, then it will be convenient to insert a reversible slip under the bin label. One end of this slip should be plain and the other end marked with a distinguishing color with a space for entering the location number at which the surplus is stored. This device, together with the arrangement of the bin label and holder, is shown in Fig. 4.

Floor Locations. Some materials are more conveniently stored in open floor spaces than in bins and it becomes a more difficult problem to number floor locations. The specific assignment of locations and the numbering of them, however, can be systematically accomplished by stringing wires

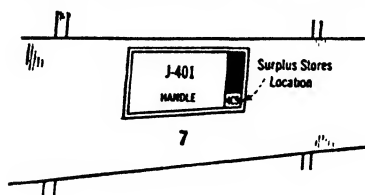


FIG. 4.—Bin marking with holder and removable label.

overhead and hanging numbered cards from these wires. Such an arrangement is convenient in paper warehouses in which flat stock is piled high. Posts or other obstructions should be avoided, so that the full floor space will be free for truck movements. In other cases, such as in plants requiring the storage of numerous materials either in containers or in stacks on the floor, an arrangement such as illustrated in

Fig. 5 is convenient. In these cases, the locations are marked in a manner similar to that explained in Fig. 4.

The aisles are numbered and the locations corresponding to the bins are numbered. Thus the location shown in Fig. 5, for example, if it is located in storeroom 63, would be 63-9A3. The location of the material in the bin shown in Fig. 2, if located in storeroom 63, would be 63-5C2, thus preserving the consistency with which locations are specified under the different conditions.

Vertical Stacking. If it is undesirable to store particular rod stock in a horizontal position, or if space limitation leaves insufficient room for the horizontal storing of bar or rod stock such as is used in automatic screw machines, then provision may be made for vertical storing as illustrated in Fig. 6, the location numbering scheme being similar to that illustrated in Fig. 5.

Pipe Frame Racks. For storing long bars, rods, structural shapes, or tubes of sizes that can be moved manually, a rack constructed of pipe framework such as illustrated in Fig. 7 is convenient. The marking may be carried out in accordance with the principle already explained by hanging the label holders vertically where they are out of the way, as indicated to the right of Fig. 7.

Color Code for Steel Bars. When steel bars of different specifications are stored in such a rack the specification is sometimes indicated by color code, the colors being painted on the ends of the bars and rods. If appropriate identification numbers are assigned to the various grades of steel and if the storeroom routine is followed in a systematic manner, this painting of the

ends can be dispensed with. A common source of trouble with such a rack is that no provision is made for taking care of random lengths, or remnants. The rack being entirely open, any remnants that are not long enough to

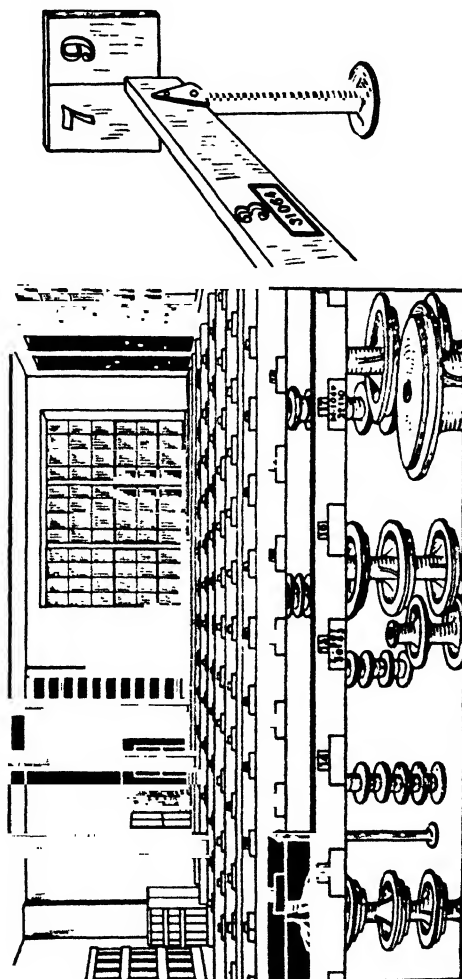


FIG. 5.—Method of marking floor location of stored material.

span the two adjacent supports fall through. If the pieces are placed somewhere else in the department a clutter of remnants accumulates. It is good practice to shelf in the first space of racks of this kind, as Fig. 7 illustrates.

Heavy Bar Stock. As bar stock gets larger and heavier, necessitating the use of a crane or hoist for handling it, then a fixed rack is no longer applicable. A suitable arrangement may be obtained by the use of wooden spacers which

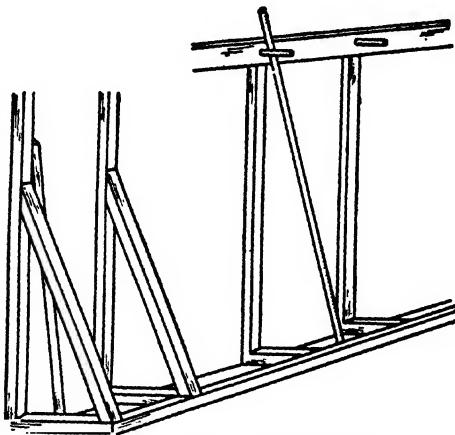


FIG. 6.—Storing rod stock on end.

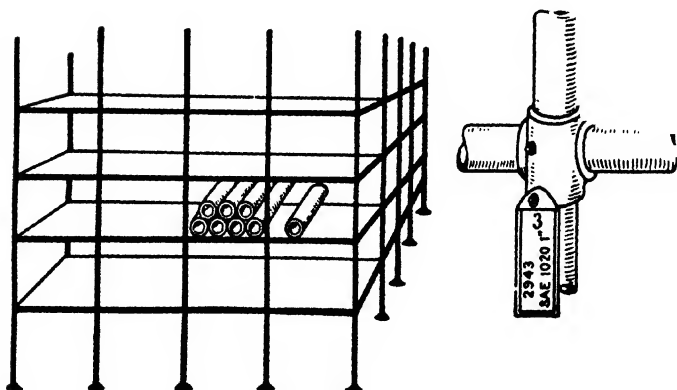


FIG. 7.—Pipe framework for horizontal storing.

can be inserted when the bars are placed in the storeroom and removed as the bars are used up. This principle is illustrated in Fig. 8. When large steel bars are stored in this manner it is sometimes found convenient, and a

safe precaution, to indicate the specification of the steel by color code, a stripe of the appropriate color being painted the whole length of the bar.

With stock of this nature it is good practice to locate the cut-off saws in an aisle perpendicular to the bars, thus avoiding the necessity of swinging the bars around while they are suspended from the crane or hoist.

Storeroom Index. It is good practice to have the materials issued to the manufacturing departments by the stores department in accordance with authoritative releases from the production or planning department in the form of some sort of requisition. However, through needs arising in the manufacturing departments, such as spoilage, some materials may have to be requisitioned by shop employees. In order to make it possible for the storekeeper readily to find the material required it is desirable to have an index in the storeroom giving the location of all the parts and materials carried on hand. This may be in book form or card form, frequently loose leaf and with a visible index.

Orderly Piling. Besides being accurate in the disbursement and checking in of materials, the storekeeper should be orderly. Materials or parts should be neatly arranged and the whole appearance of the stores department should have an atmosphere of orderly control. Various kinds of parts may have to be stacked in different ways and a little ingenuity on the part of the storekeeper will reveal the most desirable way of stacking even complicated parts.

In Fig. 9 there are shown two incorrect ways of piling pedestal bearings and a correct way. By applying the proper means in such cases floor space can be conserved and the stores department given an orderly appearance.

Unit Piling. Handling and storing of parts, or material items, in standard unit lots is often economical. It is a particularly economical practice when the unit quantity can be processed through the manufacturing departments and into stores intact. Special trays may be convenient as illustrated in Fig. 10.

Heavy material, such as flat paper stock, may be economically handled if standard quantities are strapped onto inexpensive skids. The whole unit may be handled into and out of freight cars and warehouses with facility.

Similarly standard quantities of lumber may be stored on platforms the wheels of which rest on rails. The whole unit may be drawn into the kiln by tractor and thence to the mill.

Stock Parts and Finished Goods. Finished goods should be identified by catalogue numbers and parts should be identified by drawing numbers, if manufactured, or by stock numbers if they are purchased for stores. If

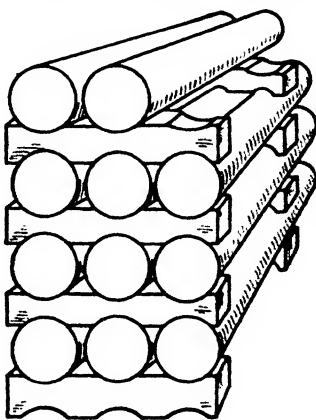


FIG. 8.—Horizontal storing of heavy bar stock.

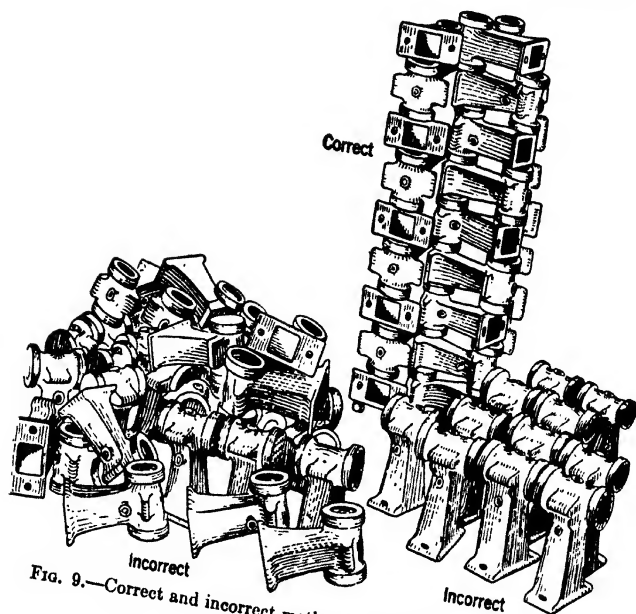


FIG. 9.—Correct and incorrect methods of piling pedestal bearings.

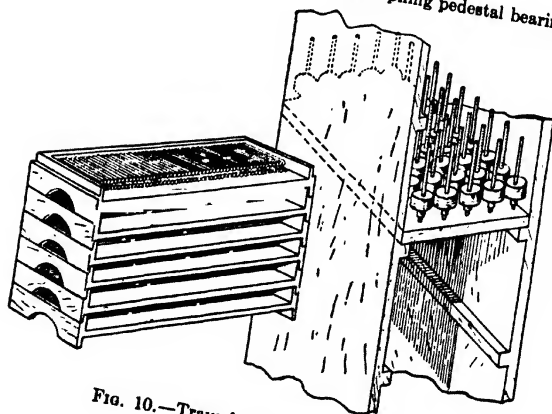


FIG. 10.—Trays for standard unit lots.

parts are purchased only as required for a particular order, they need not necessarily be given a number of any kind. These two classes of items, namely, finished goods and finished parts, are tied together by material lists. This list is of vital importance in connection with the mechanism of production control in establishments involving assembly and care should be exercised in making it of appropriate design adequately to serve this function.

As mentioned in a previous paragraph, there are three classes of parts entering into assemblies:

S parts, which are carried in stores.

P parts, which are purchased directly as required.

M parts, which are manufactured only as required.

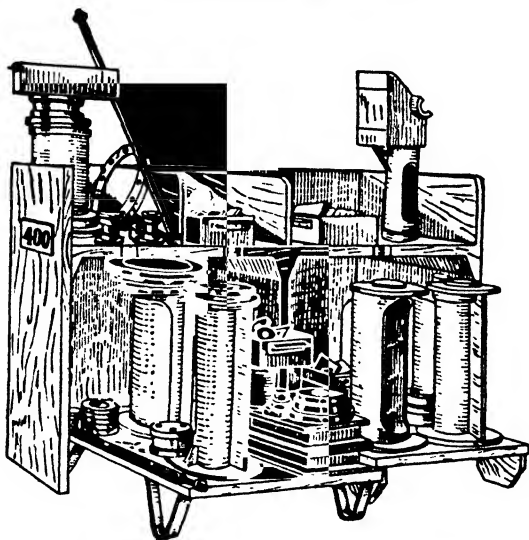


FIG. 11.—Storing of finished parts ready for assembly.

Thus when a finished device is to be produced, it is necessary to obtain some parts from stores, to issue purchase orders for others and to issue individual manufacturing orders for still other parts. Indication of which class each of the parts falls into is made on the material list, but there must be provided in addition to this, some systematic means of accumulating the various classes of parts so as to minimize the attention that must be given to getting all the necessary items together quickly and as automatically as possible.

Control of Parts for Assembly. Therefore, in the finished parts stockroom, or in a properly protected enclosure in the assembly department, there should be provided an arrangement such as is illustrated in Fig. 11. At this location

there should be hung a copy of the material list so that the different classes of items may be checked off as they arrive from the receiving department, stores department or from the various manufacturing departments. All of the classes of parts should be routed directly to the accumulation stall assigned to the particular job on which they apply, thus bringing the items together automatically.

Platforms for lift trucks may be used to advantage for the major parts and a shelf may be provided for the minor parts with tote boxes to receive them and to minimize handling. When the items on the list are all checked off, the job is ready for the assembly floor.

It usually happens that not all of the parts have been received up to the time when the job is scheduled to be delivered to the assembly floor. The storekeeper should watch this and he should be in a position to follow up on delayed items. For this purpose a schedule board is of advantage. This may be simply a blackboard with columns as shown in Fig. 12. Each

ASSEMBLY ORDER NO	LOCATION	DATE TO DELIVER	OUT
E-5701	5 A 3	$\frac{1}{2}$	$\frac{1}{2}$
E-5705	4 A 1	$\frac{1}{2}$	

FIG. 12.—Finished-parts assembly schedule board.

assembly or erecting order number is registered as soon as the material list is received in the finished stock department, or in the enclosure in the assembly department. The location number of the accumulation stall where the parts are to be gathered and the date when the materials are to be delivered to the assembly floor. Two or three days in advance of this wanted date the storeskeeper should glance over the material list in order to note any missing items and get in touch with the production office, or planning department with a view to obtaining the items needed. If the practice is in effect of making advance deductions of stock parts from the stores record in the office, then the storeskeeper need not necessarily gather up the *S* items shown on the material list until it is about time for the job to be sent to the assembly department.

It is important to have these accumulation stalls protected by having them enclosed. Otherwise when the assembly department starts to work on a job it may find numerous parts missing because of having been "robbed" for other jobs or taken to replace parts spoiled.

The finished goods should be kept in a stockroom as convenient to the shipping department as possible. Locations should be marked in accordance with the foregoing principles and a record of the products in stock should be carried in the production or planning office so that incoming orders for stocked products may be deducted from the stock record and dispatched immediately to the shipping department for shipment from stock.

Requisitioning and Delivery. When materials or parts are transferred from the stores department to a manufacturing department, the requisition, which furnishes the authority for the transfer, has to perform more than the simple function of drawing the material. The requisition is also the medium from which a deduction is made on the stores record and from which the cost department makes the financial transfer from the inventory account to work in process and to the job cost. That is, the requisition is not only the authority for delivering material but it also is the basis of clerical transactions.

The expense involved in the clerical work is usually charged to overhead expense and therefore if there is a needlessly high number of requisitions flowing into the office from the storerooms and if the values represented by the requisitions are small, the overhead expense will be needlessly high.

Furthermore, there are manufacturing processes such as molding of composition parts, for which the production orders call for large quantities to be produced day by day over a considerable time. Material has to be drawn from fresh quantities which are prepared day by day and therefore, in the course of completing the production order, a large number of requisitions may be turned in for material applying on a single production order, each calling for relatively small quantity with the small quantities varying. These large numbers of requisitions have to be added together in order to arrive at the total amount of material consumed on the production order to which they apply and the clerical work entailed may be considerable. Furthermore, if there turns out to be any discrepancy between the total amount of material shown on the requisitions and the standard amount that the production order should have required, there is no way of making a satisfactory reconciliation. It is usually too late to make a check-up or investigation and the custom is simply to charge whatever the requisitions call for.

Then there are the small-cost parts and materials which move in small quantities into production. To have to make out a requisition for small values of this kind involves a handling and clerical expense that may be badly out of proportion to the value of the materials covered by them.

"Drawing" or "Issuing" Materials. These are some of the conditions that determine the proper basis for drawing or issuing materials from stores. If production orders are issued to the manufacturing departments and the necessary materials then requisitioned, that means drawing material from stores. On the other hand, if the production orders are prepared in the production or planning office, the material figured or copied from a material-standard record, and then issued to the stores department on the way to the manufacturing department, then the stores department prepared the material in advance of the receipt of the order by the manufacturing department and that is issuing material from stores. In so far as possible, all movements in the productive process should be forward movements. That is to say,

in a manufacturing plant it is usually the better practice to issue materials than to draw them.

The distinction may be illustrated in two ways, and these two ways have much to do with the determination of what is best practice in requisitioning materials.

Planning Requirements in the Shop. The first of these two ways is for the production office to prepare production orders and issue them immediately to the manufacturing departments. The production office may even go so

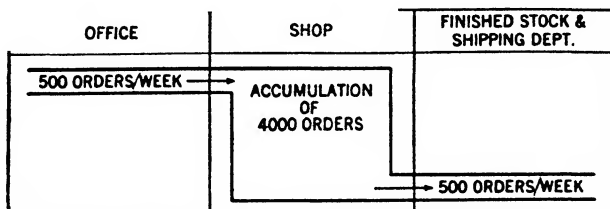


FIG. 13.—Orders transmitted to shop for preparation.

far as to make an advance deduction from the stores record or perpetual inventory record without identifying the entry thus made on the stores record with the particular production order. When the manufacturing departments are in a position to start work on an order, they may proceed to requisition the necessary materials, writing out a requisition in at least one copy and presenting it to the storeskeeper. All of the production orders, under this condition, are in the manufacturing departments where they are sorted out and planned. The situation is represented in Fig. 13.

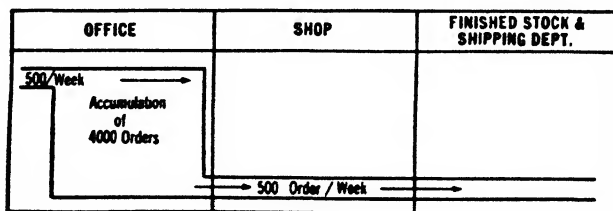


FIG. 14.—Orders prepared in advance for the shop.

If the situation is like this, then the materials are drawn from stores.

Planning Requirements in the Office. The second method is to provide for the material requirements in the office, retain the orders in the office until they are scheduled to be worked on in the shop and then transmit them to the stores department where the materials are prepared and delivered to the shop with the orders. For comparison, this situation is represented in Fig. 14.

In the latter case the materials are issued from stores. These two opposite situations make considerable difference in the storeskeeping routine. The second is usually the more desirable plan for a factory because it puts the urge in the forward direction by transmitting to the shop fully planned orders ready to be executed.

Before explaining the requisitioning procedure for this second situation it will be desirable to view the two methods from the standpoint of stores control. Strict accounting procedure would require that a requisition, just as a bank cheque, should be presented before the material is withdrawn from stores and that this requisition should not be deducted from the stores record until after the material has been delivered. This would mean that the stores record will always be lagging behind the movements of material thereby becoming a historical record of past transactions and therefore not constitut-

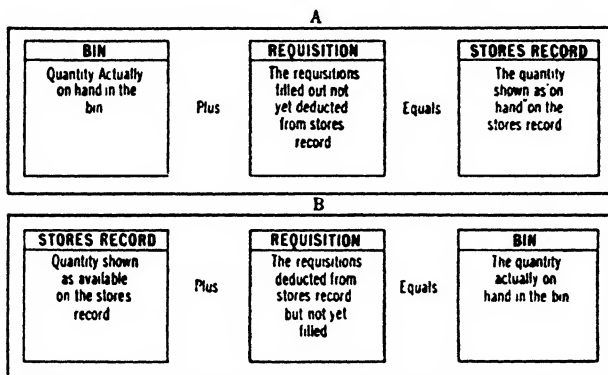


FIG. 15.—Comparison of stores control methods. A, the draw method. B, the issue method.

ing an element in the control of materials. The bin will become empty before the stores record shows none on hand and shortages will inevitably result and probably necessitate the expense of "shortage chasers" in the shop.

Comparison between Draw and Issue Methods. The opposite situation to this is the one wherein the stores record is placed in advance of the actual movement of material by making the deduction from it before the material is actually delivered from stores. In this case the stores record will show none on hand some time in advance of the time when the bin actually becomes empty and this advance warning may be sufficient to avoid actual shortages, thereby placing the stores record in a control position.

A comparison of the two plans is shown in Fig. 15.

In so far as storeskeeping has to do with productive materials, it is usually advisable to include as many items as possible under the so-called issue method, making a deduction from the stores record before the material is actually removed from the bin or location. If the unfilled requisitions are

handled systematically, being kept together in the storeroom until they are filled, then it would not be difficult to reconcile the bin count with the balance shown on the stores record. All that would be necessary is to add up the unfilled requisitions for each item and deduct the total from the quantity in the bin, then the remainder should agree with the balance shown on the stores record.

Reconciliation of Stores Records. Requisitions are not always necessary for productive material. Production orders or material lists may take their place as will be explained in a later paragraph. However, whatever form the medium may take, the principle is the same in making this reconciliation.

Form 94	BIN CHECK		DATE _____
DWG. OR STK. NO. <u>X-531</u>	PART <u>Shaft</u>	MATL <u>Steel</u>	
STOCKROOM <u>63</u>	LOCATION <u>16 F 4</u>		
A QUANTITY IN STOCKROOM BIN OR LOCATION	<u>20</u>		
B QUANTITY ON UNFILLED REQNS. & M.L.S IN STOCKROOM	<u>4</u>		
C QUANTITY ON UNFILLED REQNS. & M.L.S. IN OFFICE ALREADY POSTED	<u>3</u>		
D QUANTITY THAT SHOULD APPEAR ON STORES RECORD A-B-C	<u>13</u>		
<u>C.H.</u> STORES RECORD	<u>a m.</u> BIN COUNT BY		

FIG. 16.

It is good practice to check the bin counts at least once a year, or oftener, if necessary, in order to keep the counts and the balances shown on the stores records in agreement. If they are kept in agreement by such a plan, then it would not be necessary to take a physical inventory at the end of the year.

A convenient reconciliation slip for use under the issue method above described is shown in Fig. 16.

When Productive Material Requisitions Are Economical. Material requirements may be indicated directly on the production order or, in the case of materials required for assemblies, the requirements may be enumerated on material lists. In either case it is not necessary to copy these requirements onto requisitions unless one of the following conditions exists:

1. That an appreciable percentage of the items called for on the production orders or material lists going through in any one day are repeated on several of the orders or lists.

2. That an appreciable percentage of the items on each list are repeated frequently in that list.

3. That the part numbers, or material stock numbers shown on the material lists do not fall in any sequence.

Under any of these conditions it may be economical to copy the requirements onto requisitions so they can be sorted for posting to the stores record. The repetition should be sufficiently frequent so that the cost of preparing and sorting the requisitions will be offset by the convenience afforded in the operation of posting.

Convenient Form of Requisition. When requisitions are used, it is well to have one color for supplies, or expense materials, and another for productive material, since the former have to be charged to overhead expense and the latter to the costs. A convenient form of requisition, when prepared by hand rather than by Fanfold typing, is shown in Fig. 17.

57 DATE	1 1/4" Bl. Cup		2505-17 N DRG. OR STK. NO.	Be. MATL.
63 STCKR'N	6 C 18 LOCATION		2 QUANTITY	- PATTERN NO.
55 TO DEPT		13¢ UNIT COST	26¢ AMOUNT	3509 ORDER NO. OR ACCOUNT
REMARKS				
STORES REQUISITION FOR ALL PRODUCTIVE MATERIAL FOR REQUISITIONING SUPPLIES USE YELLOW FORM				
Form No. 16			SIGNED <i>F. H.</i>	

FIG. 17.

The convenience of this arrangement lies in the natural sequence for the storeskeeper who first reads the item, then the identifying number, then the location and finally the quantity required, and for the cost clerk who finds the quantity and price near together and, when the extension is made, finds the amount adjacent to the order number or account number to which the charge is to be made.

These requisitions are evidences of the transfer of values. It involves time and expense to make them out and handle them. Therefore, the value covered by the requisition has a bearing on the economy of their use. It is not advisable to make out a requisition costing 2 cents in order to obtain an item which in itself costs only 1 cent. This fact is one of the important considerations in the question of decentralized stores of small parts or inexpensive materials, and in the question of what form the requisition should take in order to be of economic value.

Special Forms of Requisitions. In the case of large production orders, which may run over several days or weeks, and requiring material that cannot be completely issued all at one time either because of space limitations, convenience, or deterioration, it would not be economical to write out a requisition every time a batch of materials were required for the day's work. Numerous requisitions would pile up against the order and entail considerable clerical work in order to sort them, total them, make the extension and compare their total quantity with the standard quantity initially specified for the job. Furthermore, in case the total of the requisitions varied conspicuously from the initial standard, it would be exceedingly difficult to effect a reconciliation.

PART NO. J 249										MATL. AA 53										S.O NO. 59816									
1200					1050					900					750														
08	08	08	08	08	08	08	08	08	08	08	08	08	08	08	08	08	08	08	08	08	08	08	08	08					
08	08	08	08	08	08	08	08	08	08	08	08	08	08	08	08	08	08	08	08	08	08	08	08	08					
09	09	09	09	09	09	09	09	09	09	09	09	09	09	09	09	09	09	09	09	09	09	09	09	09					
09	09	09	09	09	09	09	09	09	09	09	09	09	09	09	09	09	09	09	09	09	09	09	09	09					
2400					2100					1800					1500														
7200		14400				MATERIAL DRAW CARD										Total 420										Lbs.			
006					006					006					1200														
60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60					
60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60					
30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30					
●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●					
25161					591					300					450					600									

FIG. 18.

In such cases a special form of requisition may be found convenient, such as shown in Fig. 18. When a blanket requisition of this type is used, the total material requirements are figured in advance and marked off on the form as indicated at 420 pounds in this case.

Each day, as the worker is furnished material in convenient, and uniform lots, the quantity is indicated on this form by merely punching out the quantity with a conductor's punch as illustrated. As this punching out continues day by day, the limit mark is finally reached, thus automatically stopping the issuance of material against the particular job. Should it happen that the job is not yet finished, and more material is required than was thus provided for, an investigation can be made at the time to determine whether the initial material calculation was wrong or whether the material was not used economically.

Similar forms are convenient in connection with material issued to automatic screw machine departments in which it is not desirable or convenient to keep a large quantity of material on the floor. If a deduction has been made in advance from the stores record of the amount marked off on such a blanket requisition, and if it becomes necessary to increase the amount of material thus provided for on account of the initial material calculation having been in error, or there having been a variation in the weight of the material itself, then a special requisition for the excess should be prepared so that the stores record may again be posted in order to cover this excess. If the excess results from spoilage, then a regular spoilage ticket should come through and this should be the authority for the issuance of the extra amount of material.

Use of Consistent Units. An illustration of conditions under which an excess often has to be issued on account of the material standard having been wrong is had in the case of such material as sheet fibre. The fibre is purchased by the pound, issued by the pound, but may be used for making punchings which are governed by square inches. Unless the fibre always weighs the same, per square inch, then there will be a discrepancy, because 100 pounds in one lot will not yield as many square inches as in another lot. When the number of pieces to be produced has to fit into a production control plan, and therefore be of importance in providing a balanced quantity of parts, it will be desirable to translate the pounds into square inches, or square feet, when the newly received sheet stock is put into stores, and the stores record set up in terms of the surface measure.

Weighing Clerical Cost against Value of Requisitions. In case there are small parts, or inexpensive materials, called for in a material list for a job, and along with these relatively small-cost items there are others of relatively large cost, as is usually the case, then some attention should be given to the law of diminishing returns in the preparation of requisitions. It would not be advisable to make out many requisitions for items which cost only one or two cents each if the cost of handling the requisition were two cents or five cents. Some line of distinction should be drawn between the items for which requisitions are economical and those for which they are not economical. It is a balance between the cost of handling a requisition and the value covered by that requisition. That is, if a small-unit cost item be represented by c , and the small quantity in which it moves into production be represented by q , then the value covered by the requisition would be

$$v = cq.$$

Unless the cost of handling the requisition is small in comparison with this value, then requisitioning, in the usual manner, is not economical. The cost of a requisition, in per cent of the value covered by the requisition, runs up rapidly as the value of the requisition decreases.

If R = the cost of making out and handling one requisition,

p = the per cent which this is of the value covered by the requisition,

c = the cost of a small-unit-cost item,

q = the small quantity in which the item moves into production,

then
$$R = pcq \text{ or } p = \frac{R}{cq}$$

If the unit cost of an item is relatively large, as represented by C , and the item moves into production in relatively large quantities, as represented by Q , then the same equation holds, with the corresponding symbols, that is

$$p = \frac{R}{CQ}$$

It will be evident that as the value cq increases toward the larger value CQ , the percentage cost per requisition will decrease or, as the value covered by the requisition decreases, the percentage cost of preparing and handling a requisition will increase.

With the use of the equations it will not be difficult to determine what should be the maximum allowable cost per requisition in proportion to the value covered, or what should be the minimum value for which the writing of requisitions should be permissible.

Alternative to Requisitioning. As previously stated, some other way should be found for obtaining small-cost, small-quantity parts and materials than by requisitioning. Part of the question lies in a consideration of what degree of precision is required in the costing operation. It might be quite satisfactory simply to use the parts without any requisition whatever, provided there is no need for knowing to what extent the costs may be upset by such practice. However, with due regard for costs and for convenience in obtaining such items the methods open to choice for avoiding requisitioning are as follows:

1. The items may be classed as supplies, or expense materials, requisitioned in economic quantities into the productive departments and there used freely as required in the same way such items as paint would be used.

2. For each assembly requiring such items there could be established a standard percentage for these items and they could be put into the costs by adding this percentage to the total cost of the other items, a service supply of the items being carried in the manufacturing department.

3. The total of all small items could be drawn out in economic quantities, charged to a special deferred account and this account liquidated into the overhead expense each month in a manner similar to that for handling depreciation charges.

4. They might be ignored altogether as being of relatively small importance.

5. For assemblies, all of the small items might be made up into standard packages, given a stock number, and handled as one unit for assembly jobs.

The selection of the most satisfactory method to use will depend upon the particular nature of the manufacturing process and the particular conditions existing.

SECTION IV

OFFICE MANAGEMENT

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CHAPTER I

THE FIELD OF OFFICE MANAGEMENT

By M. B. FOLSOM, *Assistant Treasurer, Eastman Kodak Company*

This outline of office management contains sixteen general subdivisions as follows (see Fig. 1):

- Building.
- Furniture and equipment.
- Office appliances.
- Stationery and forms.
- Personnel.
- Job analysis.
- Salary standardization.
- Correspondence.
- Stenography and typing.
- Mailing.
- Filing.
- Intercommunication.
- Organization.
- Departmental expense statements.
- Office methods and routine.
- Measurement and control of output.

In order to function efficiently an office manager should touch upon every one of these phases of work. One cannot say that one is any more important than the others. Each one should be covered and they are all interdependent.

Under the various headings we have:

Building.

- Efficient floor layouts.
- Lighting, daylight and artificial.
- Heating and ventilation.
- Reduction of noise.
- Locker rooms.
- Toilet facilities.
- Drinking fountains.
- Elevators.
- Planning for expansion.
- Maintenance.
- Materials handling equipment.
- Safety.

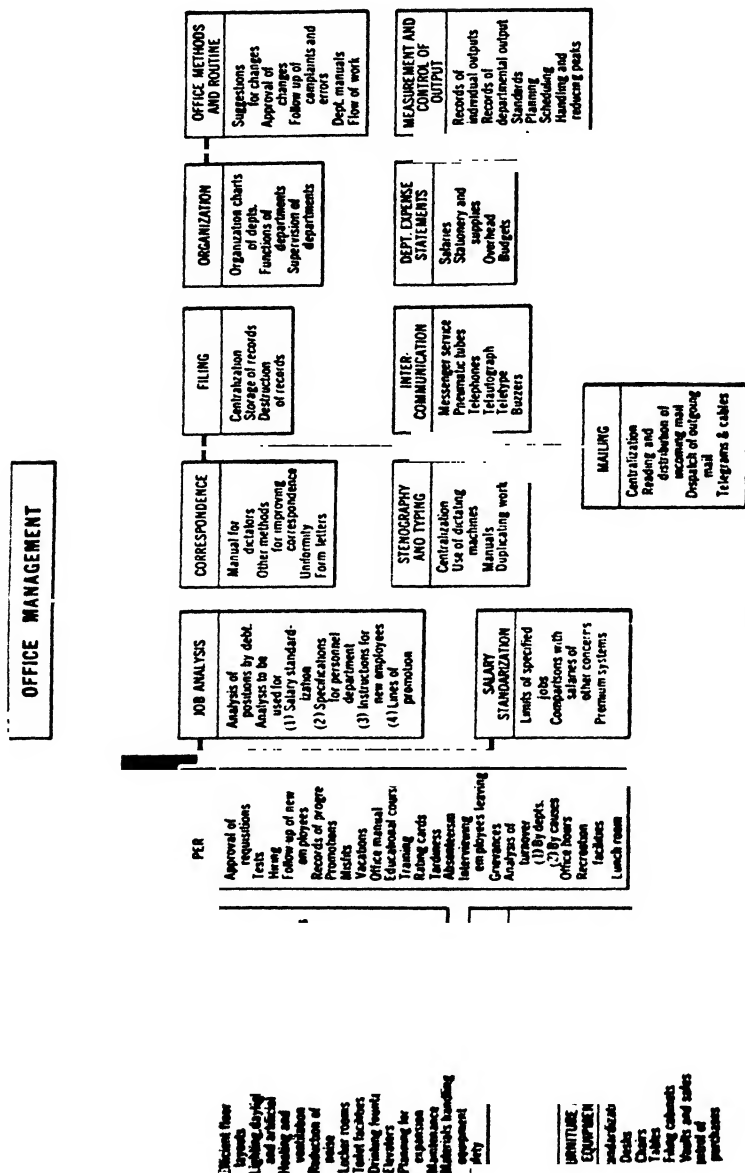


FIG 1

Efficient floor layouts and planning for expansion are two of the most important functions in regard to the building that the office manager has to face. It is a general rule for offices to increase in size, and if some definite plan is worked out to cover the expansion for a few years ahead, there will be less confusion and inconvenience when the increase comes.

Furniture and Equipment.

Standardization of

Desks.

Chairs.

Tables.

Filing cabinets.

Vaults and safes.

Control of purchases.

Office Appliances.

Standardization of

Approval of requisitions for

Maintenance of

New uses for

Adding machines.

Billing machines.

Bookkeeping machines.

Calculating machines.

Dictating machines.

Duplicating machines.

Mailing machines.

Typewriters.

Miscellaneous machines.

Office appliances.

As a general rule we depend upon salesmen to present to us new uses for their machines, but often the salesmen are not familiar with the work being done in the various departments. The office manager should, therefore, keep in close touch with the new machines that are brought out, and by means of periodic surveys of the routines in the departments ascertain whether there are uses for these machines or new uses for the older type of machine.

Stationery and Forms.

Standardization of forms:

1. Size.

2. Typography.

3. Paper.

4. Color.

Standardization of supplies:

1. Grade or kind.

2. Quantity to order.

Control of purchases and disbursements:

1. Stationery.

2. Supplies.

Several companies have been able to make a distinct saving by making a thorough survey of stationery and forms. In many cases more expensive

forms are being used than are necessary and savings will result also from standardization.¹

Personnel.

- Approval of requisitions.
- Tests.
- Hiring.
- Office manual.
- Follow-up of new employees.
- Records of progress.
- Promotions.
- Misfits.
- Vacations.
- Training.
- Educational courses.
- Rating cards.
- Tardiness.
- Absenteeism.
- Interviewing employees leaving.
- Grievances.
- Analysis of turnover.
 1. By departments.
 2. By causes.
- Office hours.
- Recreation facilities.
- Lunch room.

Job Analysis.

- Analysis of positions by department.
- Analysis to be used for
 1. Salary standardization.
 2. Specifications for personnel department.
 3. Instructions for new employees.
 4. Lines of promotion.

Salary Standardization.

- Limits of specified jobs.
- Comparisons with salaries of other concerns.
- Premium systems.
- Premium or bonus systems are being quite generally used for the following jobs:
 - Typing.
 - Dictating-machine transcription.
 - Tabulating.
 - Billing.
 - Posting.
 - Addressograph operating.

In some offices the premium or bonus system has been extended to other jobs, but progress in this direction has until recently been slow.

¹ See Chap. VII, Forms: Their Design and Use.

Correspondence.

- Manual for dictators.
- Other methods for improving correspondence.
- Uniformity.
- Form letters for routine correspondence.

The general practice now in use for improving correspondence seems to be to issue a series of booklets for the dictators. Each booklet is concise and deals with only one phase of the general subject.

Stenography and Typing.

- Centralization.
- Use of dictating machines.
- Manuals.

Mailing.

- Centralization.
- Reading and distribution of incoming mail.
- Dispatch of outgoing mail.
- Telegrams and cables.

Filing.

- Centralization.
- Storage of records.
- Destruction of records.

As records gradually accumulate, the question of destruction of records becomes of increasing importance. In our case, we have reached the point where we have to destroy some of our old records or increase the size of our vaults. We have made a survey of all our records, listed them by departments and have obtained a decision from the department head, the Accounting Department and the Legal Department as to the length of time each record should be kept. We have found that it is useless to keep many of these old records and we know exactly how long each record should be kept.

Intercommunication.

- Messenger service.
- Pneumatic tubes.
- Telephones.
- Teletype.
- Telautograph.
- Buzzers.

Organization.

- Organisation charts of departments.
- Functions of departments.
- Supervision of departments.

It is well to have organization charts not only of the office as a whole but also of the individual departments.

Departmental Expense Statements.

- Salaries.
- Stationery and supplies.
- Overhead.
- Budgets.

Office Methods and Routine.

- Suggestions for changes.
- Approval of changes.
- Follow-up of complaints and errors.
- Department manuals.
- Flow of work.

Periodic Departmental Surveys by Some One with a Perspective. In order to keep the office routine on an efficient basis, it is necessary that periodic surveys be made of the individual departments. The survey should be made by someone outside of the department who can bring a different viewpoint into the work. After the survey has been completed, recommendations, if any, are submitted to the department head for his approval or disapproval.

Measurement and Control of Output.

- Records of individual outputs.
- Records of department outputs.
- Standards.
- Planning.
- Scheduling.
- Handling and reducing peaks.

In keeping the records of individual and departmental outputs, it has been found valuable to use graphic charts. The information can be presented to the department heads in a more striking form by the use of charts.

CHAPTER II

PHYSICAL FACTORS

HOUSING BUSINESS ORGANIZATIONS FOR EFFICIENT OPERATION¹

BY HARRY ARTHUR HOFF, *H. A. Hoff and Company*

In the past two decades the factor of rapidly increasing size has become an outstanding characteristic of American business organizations. This factor has made its influence felt to such an extent that special housing problems have forced themselves upon the consideration of business executives and they have been compelled to seek solutions mainly by the trial and error method; needless to say, the solutions arrived at in this manner have not always satisfied the needs.

With increasing size of business organizations we usually find as concomitants the development of functionalization, specialization and mass production, accompanied by mechanization of work and standardization of equipment. These increasingly complex conditions, in turn, create special operating requirements which have an important influence on housing considerations. Among the requirements which must be taken into account in planning the physical setting to be provided for the performance of work are these:

1. Need for more effective organization and control.
2. Need for increased accuracy and dispatch in connection with routine operations.
3. Need for better adjustability of space to operating requirements.
4. Necessity for achieving higher standards of illumination, ventilation, acoustics, and other physiological factors.
5. Introduction of mechanical intercommunicating devices.
6. Suitable location of centralized suites for executives, as well as of offices for department heads.
7. Proper location of vaults, storage rooms, and supply departments.
8. Provision of adequate service elements.
9. Provision of adequate facilities for reception of public.
10. Provision of adequate facilities for receiving, storage, shipping, etc.
11. Adaptability of space to varying rates of departmental growth.
12. Maintenance of sound balance between horizontal and vertical expansion.

¹ An address delivered before the Chicago chapter of the American Institute of Architects and published by *The Architectural Forum*, April and May, 1930.

The architect who is faced with the problem of bringing to expression in a building which he has been commissioned to plan, a logical and comprehensive scheme of utilization which will meet the needs just mentioned, together with many other needs of related character, often finds himself hampered from the very beginning of his study by the fact that, as a rule, the client either does not know his own operating requirements or is unable to express them in terms which the architect can understand. Furthermore, it is frequently the case that the client has committed himself to the purchase of a site without consultation with those competent to advise him, and thus, regardless of operating requirements, the possibilities open to the architect are sharply limited by the fixed conditions.

For the purposes of the present discussion let us accept as a postulate the principle that in all building planning, and particularly in the case of a special purpose office building intended for exclusive occupancy by one organization, the proper point of departure is a study of the organization and its requirements. I shall endeavor to outline the major elements in a practical program covering a special purpose office building project and, against such a background, to describe briefly the specific manner in which the physical conditions of the building must be adapted to operating requirements.

Operating Requirements and Their Effect on Planning. Assuming that a business organization is about to embark upon a new building project, the first practical step to be taken is to ascertain the effect of its operating requirements on the planning of the structure. In order to secure the basic facts, a study of departmental organization should be undertaken and a statement prepared giving the names of the various operating units, together with comprehensive descriptions of the functions performed by each. With such a statement available, the next step is to identify all the departments particularly concerned with service to the public, for it is obviously necessary to give such departments preferential locations so as to facilitate their contacts with the public.

Having determined in a preliminary way the manner in which outside contacts are to be maintained, the next step is to ascertain in a tentative manner the desirable physical grouping and location of operating units, based upon:

1. Character of supervision required.
2. Related nature of work.
3. Frequency of personal intercommunication.
4. Proximity of supervising officials.

The influences on space planning exerted by these four factors often prove to be of conflicting character. It therefore becomes a nice problem to determine which of the four factors shall be given the most weight and how reconciliation of differences may be achieved. Unless the problems involved in departmental location and layouts are solved from the broad point of view of benefit to the whole, it will be impossible to avoid costly changes and alterations after the organization is housed in the new building.

Mechanization of Work. One of the outstanding characteristics of modern management is the trend toward mechanization of work. The increasing

need for accuracy and speed occasioned by the exacting demands of business makes it impossible to continue to achieve satisfactory results through the application of human energy alone. Consequently, in the last decade or two, we have witnessed enormous developments in the field of office machinery and the subordination of office procedures and systems to the possibilities presented by the use of standardized machinery.

The introduction of such machinery has, perforce, had an influence over the provision of space and the modification of space standards, as well as over the augmentation of wiring services, far beyond anything which could have been imagined ten years ago. It has, moreover, brought about the necessity of installing acoustical treatment so as to reduce to a minimum the strain upon the nervous systems of workers caused by the noise of machine operation. To be convinced of the profound influence of the trend toward mechanization of office work upon the physical conditions of the environment in which the work has to be performed, one has only to make a comparison between the characteristics of the modern-day office building and those of the office building of ten or fifteen years ago.

Intercommunication. Among the more important operating requirements, viewed from the effect upon office planning, may be mentioned the need for more rapid performance of work and more expeditious intercommunication. The pace of business today is far faster than it was ten years ago. Whatever the cause for this condition, modern office planning must take account of it as a factor of the highest importance. In practice, the solution of the problem of accelerated activity is predicated upon the effective location of operating units in both the horizontal and vertical relationships and the provision of mechanical and electrical intercommunicating devices which overcome distance and which dispatch messages and papers at a rate of speed far exceeding the highest standard possible of attainment by human means.

Departmental Space. Another factor linked with operating requirements is the determination of departmental space standards and of the varying rates of growth experienced by different departments of the organization, so that adequate provision of space may be made for both present and future needs and the twin dangers of scanty or over-liberal space allowances may be guarded against. The importance of determining accurate space standards cannot be too strongly stressed, and this task should be approached by established techniques which have been devised for determining net areas required.

In a large bank whose rapid growth had necessitated the occupancy of several buildings in the financial district of an eastern city, it required a period of nearly three months of painstakingly careful analysis and study to measure present and prospective space requirements preparatory to planning a new bank building. The study was undertaken by trained engineers in the employ of the bank planning committee, and every single element entering into the detailed space calculations was checked back with the department heads concerned before the definitive space schedules covering existing requirements were ultimately compiled. After this had been done, the engineers prepared estimates of the personnel and equipment requirements as of the

approximate time of completion of the new building and for a period of five years thereafter, and from these they finally determined the probable space requirements for the same dates.

It will readily be seen from the foregoing discussion of operating requirements and their effect upon planning, that studies along the several lines indicated are essential in order to provide the owner and architect with information of valid and detailed character for the purpose of undertaking a new building program on a sound basis. Unless the influence of operating requirements over building planning is thoroughly recognized and its implications are pursued to logical limits, the success of any new building program will be open to question.

Determining the Character of the Building. After operating requirements have been ascertained, the next practical step involves the determination of the character of the building which is to be erected. Eliminating from discussion the subject of building regulations—which differ in various parts of the country—we may proceed to a consideration of the questions of size and general proportions. Both of these usually present interesting and many-sided problems. We will assume that, although the question of financial investment is naturally an important one, organizations whose affairs justify housing in a special building are usually in a position, within reasonable limits, to subordinate problems of building finance to other practical considerations. As a rule such organizations are governed by the desire to erect rather monumental buildings and at the same time to provide suitable space to meet their requirements for an indefinite period of years.

In the past, however, it has frequently happened that business organizations such as banks, insurance companies and important commercial and industrial concerns which have planned more or less elaborate buildings, have failed adequately to forecast their space requirements. Consequently, within a brief period of years of occupancy of the new offices, they have found that their quarters were becoming crowded and have been compelled either to increase the density of space occupancy or to add in makeshift fashion to the existing buildings. In recognition of this situation the pendulum has now swung in the opposite direction, and a tendency has developed to erect buildings larger than are warranted by reasonable estimates of future space requirements. This condition has caused the adoption of extravagant space standards, the tying up of capital in unproductive investment and excessive maintenance costs.

Factor of Organization. It should be recognized at the outset that the factor of organization has an important bearing upon size and proportions of the building. Most businesses will find, after study of their organization characteristics, that there are relatively few major functions to be performed. As a rule these embrace, specifically, finance, production, distribution, accounting, engineering and service. Properly to integrate these functions, it is often found advisable to locate the departments responsible for their performance on different floors of the building, or at least to group them on three or four levels. Such an arrangement obviates the creation of conflicts due to the demand for additional space caused by varying rates of departmental growth. The functions named are hardly ever found to require

areas of like size, and proper grouping usually makes it possible to provide for their future growth by means of horizontal expansion.

From the foregoing considerations, it appears that the practice of estimating space requirements for many years in advance need no longer be followed and that the problem of size resolves itself into finding the practical answer not to the query, "How big a building shall we build?" but rather to the question, "How small a structure will reasonably meet operating requirements for a limited period of time?" When the need for additional space evidences itself, this may be provided by the erection of wings attached to the first unit, and this procedure may be continued until the optimum size of the building, taking into account design and mechanical facilities, as well as limitation of the plot of land upon which the structure is erected, has been reached.

It is essential, of course, in considering size and general proportions of the building, to study carefully such questions as ceiling heights, elevators, exposure to light and air, location of fixed service elements, number of subterranean levels and introduction of special features such as vaults, storage rooms, building service units, etc.

Horizontal and Vertical Expansion. For every organization it becomes necessary sooner or later to determine and maintain a balance between horizontal and vertical expansion. If the building is so designed as to violate permissible limits in either of these directions, it may be assumed with certainty that excessive operating costs, insofar as staff and equipment are concerned, will be experienced. In one instance, the office layout which had been planned resulted in separating, by a distance of about 240 feet in the horizontal direction, two important groups of executives, the character of whose activities necessitated constant personal contacts. When this defect was pointed out to the organization, the validity of the criticism was admitted but the conclusion was expressed that nothing could be done about it since all arrangements had already been consummated.

It remained for the engineer whose advice had been sought with respect to the space problem, to make the obvious suggestion that the organization arrange to exchange one-half of the space on the floor in question for an equal area on the next floor above, in direct vertical relationship to the half floor to be retained. This plan was finally adopted, a separate stairway connecting the two floors was introduced and the two groups of executives found themselves located within fifteen feet of each other in the vertical direction. Easy communication was, of course, furnished by the stairway, and the result of the change was to facilitate extremely important contacts of constant occurrence throughout the business day and thus to save a substantial expenditure of time, money and energy.

Ceiling Heights. In considering further the problems of size and general proportions of the building, a factor of great importance is the provision of adequate ceiling heights. The modern trend in planning offices is entirely in the direction of the application of the open office principle. No longer are clerical staffs separated from each other by partitioned spaces which obstruct the flow of the work and foster the *departmental* instead of the *organization* viewpoint. In the well planned office, groups of clerical workers are brought

together in large, open, unobstructed areas which strengthen *esprit de corps* and permit of planning for expeditious procedure according to the principle of forward movement of work. For such offices, ceiling heights of more than the usual commercial standards must be provided.

One defect of the commercial type of office building for planning large areas to be occupied by scores if not hundreds of clerks, lies in the fact that, with standard ceiling heights of ten feet or thereabouts, the provision of adequate artificial illumination at desk level brings the remote fixtures into the line of vision of clerks and thus creates an unsatisfactory lighting condition. Moreover, from the psychological point of view, a relatively low ceiling height in a large open office causes an unpleasant sense of space restriction and consequently has an adverse effect upon the desire of employes to work. For these reasons and others which might be mentioned, ceiling heights of buildings designed in accordance with the requirements of large clerical organizations should be at least eleven to twelve feet in the clear; the extra cost involved in supplying this feature is, according to experience, more than offset by its favorable influence upon work productivity.

Light and Air. Considering now the questions of exposure to light and air, it is essential in order to capitalize the relatively large investment constituted by the annual payroll of a clerical organization, to provide good conditions of illumination and ventilation. Therefore, in determining the problems of size and general proportions, we must bear in mind that, until such time as dependence may be placed entirely on artificial illumination, fenestration should approach 50 per cent of the total wall space, and wings should, as a rule, not exceed fifty feet in width. If these two standards are adhered to, one may be assured that the clerical staffs to be housed in the building will, for the major portion of the business day, enjoy natural illumination and the most favorable conditions of ventilation which can be provided in the absence of an artificial system, to which specific reference will be made later.

Architectural and Work Objectives. As far as design of a special purpose office building is concerned, it may be permitted to a layman to venture the opinion that it should be characterized by simplicity, individuality and impressiveness. In general, business organizations which contemplate the erection of an office building for their own occupancy, are likely to consider first of all the architectural elements of the problem. With the highest possible regard for the importance of these elements, it should be recognized that the prime purpose of erection of a building of the type described is to further the work objectives of those whom the building is intended to house. Physical environment exercises a tremendous influence over productivity, and the first and last problems of all special purpose building planning should be concerned with the creation of conditions which will be conducive to the achievement of a decrease in operating costs.

Many years of experience in dealing with problems involved in special purpose building planning justify the opinion that the difference in work accomplishments between an organization located in a poorly planned, badly lighted and crowded office and one housed in a building which brings to expression the results of purposeful planning, based upon intelligent analysis

and adherence to high standards, amounts usually to an increase of from 15 to 25 per cent in the productivity of the staff. Translated into terms more readily understood, this means that the increase in staff productivity is often sufficiently great to exceed the interest on the complete investment required to finance the cost of the new building.

From the foregoing discussion, the conclusion is justified that the determination of the character of the building must be based upon elements such as those referred to and that a definite relationship may be worked out between the needs of the organization and the characteristics of the building which is to house it. It should be especially noted at this point that careful study of all the factors to which reference has been made should logically precede the architectural planning stage. Unfortunately, this consideration is honored more in the breach than in the observance, with the result that the burden of responsibility of the architect, in any case great, is needlessly augmented, and a series of delays, compromises and adjustments of conflicting viewpoints complicates the creative period of his work. The majority of architects who have had experience in the planning of special purpose buildings have learned to their cost how discouraging and detrimental such a condition can be. It is therefore regrettable that architects, as a rule, are without influence in the shaping of the program which should logically lead up to the planning stage.

Selecting the Site. It may seem strange that in the development of the theme which I am discussing, treatment of the problems involved in selection of the site has been delayed until now and precedence has been given to determining the operating requirements and the character of the building. It is, however, of fundamental importance, in order to safeguard the success of the entire project, that selection of the site be deferred until definite conclusions, based on careful study and analysis, have been reached concerning the two important phases thus far presented. Not until agreement has been secured regarding these major aspects of the project should a commitment be made with respect to the site, and its acquisition should always be predicated upon its adaptability to the successful realization of the objectives of the institution.

It goes without saying that the financial burden involved in the acquisition of a site is of first moment. However, the tendency to regard this factor as controlling, without consideration of the many other angles of the problem, is extremely shortsighted. Basing a decision regarding selection of site solely on consideration of the amount of investment required, without taking adequately into account the bearing of the site on the type of building which may be erected and on the standards of economy and effectiveness which can be maintained from the operating point of view, has proved a very costly experiment to many institutions which have indulged in it. It cannot be stressed too often that the chief desideratum in planning of the character under discussion is the conservation of human energy and the attainment of lower operating costs. Since the value of money is a known factor and, except under abnormal conditions, does not fluctuate very widely, it may readily be determined how far a business organization is warranted in increasing its investment in the site in order to make possible the planning of a

building which, through proper design and effective arrangement of the interior, will have an increasingly favorable influence upon maintenance and operating costs.

Site Advertising Value. Of course, financial considerations are not the only ones extraneous to operating requirements which enter into the selection of the site. In some lines of business, notably in the case of banks, accessibility to customers is one of the chief elements to be taken into account. Then too, there is the factor of advertising value to be gained from prominence of location. While it cannot be gainsaid that due weight should be given to this element, in numerous instances its importance has been unduly stressed, with the result that wholly unsuitable sites have been purchased and operating activities, as well as costs, have suffered in consequence. When considering the feature of prominence, it should be recognized that, after all, this is mainly of local value and can hardly be expected to benefit materially a business of national scope.

As a case in point, the experience of a financial institution doing business in many states of the Union may be cited. Several years ago this organization, which is located in one of the largest cities of the country, erected a building for its own occupancy on a plot of ground facing upon a prominent avenue which was used as a main thoroughfare between the suburbs and the heart of the city and was traversed daily by thousands of automobiles. The executives of the organization deliberately chose the site because of its assumed advertising value and without regard to its adaptability to operating requirements. During the building stage, it was discovered that because of certain peculiar characteristics of the site only a building of unusual proportions could be erected thereon. The planning of the structure called for the solution of a number of very intricate problems, and the influence of the limitations inherent in the site was such that the cost per cubic foot rose to a point materially in excess of the cost generally incurred in the construction of comparable buildings. The executives of the organization were not disturbed, but consoled themselves with the belief that their new building in its prominent location would prove to be an asset of great value from the advertising point of view.

Several years have elapsed since this building was erected and, while it may be conceded that its location has afforded a stimulus to business activities in its neighborhood, the rate of progress of the organization itself has not been perceptibly accelerated. Indeed, it may reasonably be assumed that it would have prospered in exactly the same measure had it remained in its smaller home in a far less prominent location. Similar instances of questionable judgment can be cited.

Urban and Suburban Sites. Of general interest in connection with the selection of a site is the question whether it shall be located in the heart of the city or in a semi-suburban or suburban locality. This point should logically be settled by the nature of the business as well as by the operating requirements which must be met by the building to be erected. Generally speaking, banks must erect buildings in business districts; on the other hand, life insurance companies are not required to do so because their business is not conducted over the counter, so to speak. The latter observation holds true,

also, of many industrial organizations which find it convenient and altogether practical to erect office buildings in the vicinity of their factory establishments.

As far as operating requirements are concerned, banking institutions must of necessity subordinate these to the dominant characteristic of vertical expansion which is dictated by the location of their buildings on expensive ground in the heart of the city. To provide the space called for by the requirements of the ever-growing staffs of the larger banks, implies that quarters must be arranged on one or more floors above the main banking room. This condition at once introduces difficult problems of personal and mechanical intercommunication. With regard to life insurance companies, attention may be called to the fact that growth in such organizations lends itself most favorably to horizontal expansion. Because, as previously said, the nature of the life insurance business does not require that home offices should be located in the center of the city, it is in consonance with good planning to acquire a site in a semi-suburban location where land is comparatively cheap and horizontal expansion can be adequately provided at relatively low cost.

To sum up what has been said with respect to the problems involved in selecting the site, particular emphasis should be placed upon the necessity of deferring any commitments in this direction until reasonably exact knowledge has been gathered concerning the operating requirements of the organization and the type of building in which these may be most effectively brought to expression. Since the purchase of a site, generally speaking, constitutes a step which irretrievably commits the organization to a course of action, it is indubitably the better part of wisdom to study the problem in all its bearings before the decision is made to purchase a site. Beyond this, it is certainly of great importance to bring the architect and other consultants into the picture at the very inception of the building project so that their combined advice may be made available before, and not after, the organization has committed itself to so controlling a step as the selection of a site. Only in this manner may serious mistakes be avoided and the building program be based upon sound and constructive considerations.

General Planning of the Interior. We come now to a consideration of certain general problems which are associated with the planning of the interior of the building to be erected. Foremost among these is the manner in which the steel frame of the building is to be arranged. The standardized design of the steel frame of a commercial office building is too well known to require comment and, regardless of the extent to which steel columns present fixed interferences with effective office planning in such a building, little if anything can be done to change this condition.

With respect to the special purpose building, however, a good deal of latitude is permissible in arranging the steel frame so as to facilitate rather than obstruct the planning of an effective office layout. Successful office operation calls for the spacing of desks and the provision of aisles in harmony with definite standards sanctioned by experience. Where steel columns would interfere with the adoption of these standards, it is wise economy to increase the allowance for structural steel so as to make it possible to span greater distances than the usual twenty feet or thereabouts: it is not at all unusual

in special purpose office buildings to span distances of forty or even fifty feet without any intervening support. The benefit of such an arrangement lies in the fact that utmost flexibility of office layout can be achieved and every available square foot of space can be advantageously utilised.

In the early planning stages of a certain fourteen story office building in an eastern city, the commercial type of steel frame had been designed regardless of the fact that the building was planned for occupancy largely by one organisation with highly specialized operating requirements. Study of the plans by an engineer who was called in to analyze the office requirements, resulted in the conclusion to eliminate practically all of the steel columns which obstructed the usable space and to compensate for this elimination by increasing the carrying capacity of the columns in the walls of the building. The effect of this change was materially to increase the capacity of each of the floors for operating purposes and thus to make it possible to hold two entire floors in reserve for future development. If the original plans had been adhered to, it would have been impossible to provide any reserve space and in a short time the organization would have overflowed its housing facilities.

In planning the interior of a special purpose office building, problems of great importance arise in the location of the fixed service elements, such as elevators, stairways, toilet and locker rooms. Space will not permit of discussion of these problems in detail; therefore, I must content myself with emphasizing their general bearing upon good office practice. With due regard for city ordinances, stairways should be so placed as to avoid interference with office planning on the one hand and, on the other, to facilitate vertical communication from floor to floor. In buildings where horizontal expansion is the rule, stairways are usually placed at points equidistant from the extremes and this is also the case with elevators and toilet and locker rooms. With respect to the last two features, decentralization of these facilities is the modern practice, i.e., toilet and locker rooms for both sexes are provided on each floor of the building. In this way not only can the needs of office workers be adequately served, but the essential control, involving particularly the reduction of lost time to a minimum, can be maintained.

It is of course important to determine peak requirements when planning service elements and to realize that in a special purpose office building, as contrasted with the commercial type, arrival and departure of the entire building population occur within relatively short periods of time, at the opening and closing of the two work periods.

At this point I desire to interpolate the observation that wherever study of the traffic in a large office indicates that employees are constantly going to and fro, that fact is *prima facie* evidence of poor planning. In particular, it implies that departments have not been located in correct relation to one another or that service facilities have not been properly placed. Any evidence of constant circulation should be thoroughly investigated in order to determine what corrective measures can be applied.

Specific Elements of Layout. We come now to a consideration of specific elements of layout, such as wiring and equipment, which have a direct bearing upon clerical productivity. Despite the fact that there is an abundance of

evidence in support of the view that individual offices for small groups of clerical workers make it impossible to maintain proper standards of clerical effectiveness, the question of the open versus the private office is still debated on occasion. However, the open office principle is rapidly being applied in all modern buildings and it is justified by reason of the fact that it promotes the forward movement of work, permits of effective placing of movable equipment and files and of proper arrangement of desks, results in minimum circulation of employees, facilitates supervision, makes it possible to provide for proper entrance and egress and reduces the partition evil to a minimum. Indeed, the advantages to be gained through effective supervision over employees at work alone warrant arrangement of the space in line with the open office principle. There is a vast difference between apparent and real industry and the role of supervision in securing increasingly favorable results from a clerical staff is of first importance. Consequently, anything which can be done in planning an office layout to establish conditions conducive to the effective exercise of supervision will be reflected in the achievement of superior operating results.

With respect to wiring and equipment, it is essential to realize that we are living in an age of electricity and that much office work which was formerly performed by hand is now dispatched with the use of office machinery. In this connection we must consider not alone office operating devices but also intercommunicating systems of auditory, graphic and "carrier" types, time clocks, time stamps, protection systems and a host of other modern contrivances which are now commonplace in the well equipped business office.

Provision for the various types of equipment cited necessitates the introduction of a far more comprehensive scheme of ducts than is usual in the commercial type of office building. The modern practice is to install series of underfloor ducts for the accommodation of both high and low tension wires, so that by tapping the ducts at any desired location, current needed for the operation of machines may be secured at individual desks. The rate of increase in the use of electrically driven machinery in offices is so rapid that unless wiring requirements are amply supplied in the planning of a special purpose office building, it is not unlikely that the building will prove to be obsolete from the moment of occupancy. It is not overstating the case to assert that hardly any problem connected with the planning of a special purpose office building requires more careful and constructive study than that involved in the provision of effective and adequate wiring services, without undue cost.

There are numerous other problems connected with the planning of the interior which might be discussed, particularly if such service features as cafeteria, dining rooms, auditorium, medical department, etc., are to be incorporated in the building. The inclusion of services of this nature demands careful planning of their location, for not only must a suitable type of space and sufficient areas be provided, but the questions of convenience to operating departments and effect on use of stairways, elevators and other service facilities must be taken into account. Furthermore, special wiring and plumbing problems, as well as problems of illumination, ventilation and acoustics, are involved. In view of the fact that the provision of services

such as those described is somewhat unusual, except for very large organizations, I shall not devote more space to them except to say that there are material advantages in centralizing the activities in question and not permitting their location to interfere with the probable expansion of operating departments or with free intercommunication among such departments.

Record Vaults. Another specialized problem which should be mentioned is the provision of vaults. Facilities of this character are of course of prime importance for banks and other financial institutions and it is obvious that the highest type of protection must be installed wherever securities, especially of negotiable character, are to be stored on the premises. It is the inclination of business institutions occupying special purpose buildings to go to extremes, however, in their regard for the safety of their property and to seek to apply to office records and papers, a type of protection which is often as formidable as that deemed fitting for securities.

Slightly less cautious is the practice of housing records in so-called vaults which, in reality, are simple spaces surrounded by moderately fireproof partitions in which fire resistant steel doors have been inserted. Facilities of this character present two important problems: in cases where frequent consultation of the records enters into the daily routine, reference is hampered by reason of inaccessibility; moreover, the walls of the "vaults" often constitute fixed and formidable physical obstacles to proper space planning and location of equipment.

The modern practice limits to an absolute minimum the provision of vaults for the storage of records and, when these are of sufficient value to be provided with special fire protection, safeguards them through the medium of portable safe cabinets which are placed in immediate proximity to the desks of the employees who must consult their contents. Ideally speaking, office records should be retained in the working areas only as long as there is real need for consulting them regularly. When this period has passed, the records should be either destroyed or removed to storage warehouses, where space is much cheaper and where they may still be consulted on occasion, even though this involves a little extra effort.

If American business organizations could be persuaded to adopt a reasonable policy concerning the protection and preservation or destruction of office records, operating costs could be materially reduced, office layouts could be more effectively planned and most special purpose office buildings could be built on a smaller scale. Precautions must of course be taken from the legal point of view and the possible consequences of loss through inability to produce records needed in connection with lawsuits should not be overlooked; on the other hand cognizance should be taken of the statute of limitations. Much of the appalling amount of paper work performed in connection with modern American business procedure is a reflection of the inability of business executives to effect a sound compromise with an extreme standard of safety.

Physiological Factors. Intimately connected with the planning of the interior and of paramount importance by reason of their influence over operating results, are certain physiological factors which should be mentioned. I refer specifically to illumination, ventilation and noise reduction. It is on the correct solution of problems in these three fields that the physical

well being of employees, and therefore their productive capacity, must depend. To convey an appreciation of the importance of these three factors, let me state that in my judgment their combined influence over work results equals, if it does not exceed, the benefits which may be produced by a progressive program of personnel policies and practices, supported by an enlightened plan of financial incentives.

Illumination. There is a definite relation between standards of illumination and the quality and quantity of work produced by office employees. Because of the fact that many office buildings, including those of the special purpose type, are located on sites where adequate natural illumination cannot be secured by reason of surrounding buildings, the provision of artificial illumination to overcome this handicap assumes great importance.

The art of illumination has made rapid strides in recent years but many business organizations still fail to appreciate the necessity of maintaining liberal standards of artificial illumination so that the insidious effects of eyestrain may be eliminated or at least reduced to a minimum. It has long been established by illuminating engineers that a standard of eight to ten foot-candles of illumination at desk height is required for most types of clerical work. Inspection of many business offices, however, reveals the fact that this standard is infrequently adhered to and that false considerations of economy stand in the way of supplying artificial illumination of a character and intensity essential to both health and effective clerical performance.

As a rule it is difficult to trace the effect of a single physiological factor, but experience and study of illuminating problems justify expression of the opinion that it is apt to be an exceedingly costly matter to omit to provide a system of artificial illumination which is in harmony with the most approved modern standards. The reaction of employees to superior or inadequate illumination, either artificial or natural, is instant and direct. Because these considerations are valid and pertinent, it is essential that in the planning of special purpose office buildings the number, distribution and arrangement of ceiling outlets be carefully studied and determined in harmony with the requirements of the particular character of work to be undertaken. Moreover, careful consideration should be given to the type of fixture to be selected, and particular care should be taken to secure not only adequate intensity of illumination at desk height, but also uniform diffusion and freedom from marked shadows.

Although dependence for artificial illumination is placed chiefly upon fixtures suspended from the ceiling, certain other factors which are not always assessed at their proper value have a vital bearing upon the results to be accomplished. It is generally known, but not always observed in practice, that the color of the paint on the ceilings and side walls should be governed by illuminating requirements. The most satisfactory results as far as office workers are concerned, have been produced from a color scheme of flat white for the ceiling and light creamy yellow for the side walls. One has only to examine the ceilings and side walls of the average office building, however, to recognize that little, if any, attention is given to this important factor.

The last point I wish to make with respect to illumination is that natural, as well as artificial, illumination should be controlled. It is therefore of

importance to consider the manner in which windows may be most effectively screened so that the distribution of natural illumination will be uniform and free from glare.

Ventilation. Of even greater influence on the well-being and productivity of employes is the quality of ventilation. When considering problems of ventilation we are dealing with three elements, namely, temperature, humidity and movement of air. Although more or less effective standards with regard to these elements may be maintained by means of a heating system and the introduction of fresh air periodically through the opening of windows, conditions produced in this manner cannot be regarded as satisfactory in the long run. The opening of windows causes drafts and exposes the clerks near them to a range of temperature quite different from that experienced by those in remote portions of the office. Moreover, in cool climates during the winter months, it is seldom that windows can be opened for any length of time and, where dependence is placed upon them for ventilation, temperatures are usually found to be far too high and circulation of air inadequate.

The preceding considerations support the statement that an effective artificial ventilating system should be provided in special purpose office buildings. Such a system should be simple of operation and control, as well as based on sound physiological principles. Very satisfactory results have been achieved by a method which depends solely on the diffusion of fresh, unheated air which has been passed through a screen to remove its impurities. The air is drawn in from the most favorable outside point, cleansed, forced through ducts to suitably located openings at the ceiling and from these is sprayed across the room at relatively high speed. Thus, the air streams spread in fan shape along the ceiling and when the initial velocity has subsided, the fresh air drops gradually to the breathing zone and, mingling with the warmer air of the room, becomes palatable for human consumption. Under this method it is possible to bring about effective control of the temperature and to produce conditions which are satisfactory from the standpoints of humidity and circulation. Several complete changes of air are effected each hour, and the used air is forced out of the room through the gentle pressure which is constantly being exerted by the operation of the system.

The difference in work results produced by employes in well ventilated offices as contrasted with those possible of accomplishment in poorly ventilated offices, is startling to the investigator. With respect to the factor of temperature alone, it may be stated that on one occasion when the temperature in an office was deliberately permitted to rise to between 75° and 80°, a reduction in output of between 35 and 50 per cent was experienced. The cost of the investment in an artificial ventilating system is more than made up in a relatively brief period of time through the increased productivity of the workers exposed to this beneficial influence.

Noise Reduction. Finally, we have to consider briefly the subject of noise. Acoustical conditions are largely affected by three factors, namely, size, shape, and materials. It is the one defect worthy of note in connection with the planning of large open offices that operating conditions are not conducive to quiet. This is of course due mainly to the fact that so much office machin-

ery is constantly in operation and that the noise incident thereto is disseminated to all parts of the open area.

The statement is commonly made that individuals can adjust themselves to noisy conditions and that they do not mind them. In point of fact, they are obliged to use energy in combating such conditions and this energy is therefore lost as far as its effective use for working purposes is concerned. Although it is difficult to adduce scientific evidence in support of the detrimental effect of noise upon production, long experience and observation of scores of offices lead to the conclusion that the difference between noisy and reasonably quiet conditions may be expressed in terms of about 10 per cent of the total output. Even though this figure cannot be verified, it is substantial enough when translated into terms of clerical costs to more than support the investment required to correct noisy conditions by the installation of acoustical treatment.

Such treatment, if applied at the time when the building is in course of erection, might take the form of special acoustical plaster which is substituted for the finished coat on the ceiling. After the building has been constructed and occupied, recourse for office quieting purposes may be had to a variety of materials among which felt, suitably covered, is perhaps the one thus far most frequently used. Although the use of office quieting treatment is becoming more and more an integral part of building construction, the expense connected with its provision is still substantial enough to justify business organizations in deferring its introduction until occupancy of the new building for a period of time has demonstrated the extent to which it should be applied.

To sum up what has been said with respect to the so-called physiological factors, permit me to emphasize the belief that no matter how beautiful or costly a special purpose office building may be, it cannot be expected to be successful in the accomplishment of the objectives which it is designed to meet, unless adequate provision is made for effective illumination, ventilation and noise reduction. In view of the importance of controlling the physiological factors discussed, no budget covering expenditures for a special purpose office building should be approved unless it contains proper allowances for expenditures covering installations along the lines indicated.

Conclusion. In bringing this discussion to a close, let me state that presentation of the subject matter which it covers has been influenced by recognition of the fact that the standardized commercial office building adapts itself chiefly to the relatively simple requirements of many small tenants and that the larger the organization, the more specialized its needs become and the more difficult it is to meet them satisfactorily in such a building. In consequence, this discussion has centered largely around the special purpose type of building and I have endeavored, using my experience in the planning of both types of building, to justify the thesis that successful adjustment of building elements to specialized operating requirements has so beneficial a bearing on the productive capacity of the staff that savings in operating results often exceed the interest on the building investment.

As a supporting consideration, I desire to stress an intangible yet important factor which evidences itself in connection with special purpose office buildings. Management may be characterized as a dynamic force which tends to

influence the tempo of performance in harmony with the quality and effectiveness of the physical setting provided. In dealing with problems of office planning over a long period of years, I have become convinced that sound adjustment of physical environment and human beings to each other may be counted upon to reflect itself in an accelerating rate of accomplishment.

Let me finally state that a constructive and enduring solution of the problems of building economics can be achieved only by proper coordination of all elements which bear on the ultimate result. The client must know how to interpret his operating requirements and to measure the development of his organization so effectively that the architect may be furnished with a comprehensive program which covers all important business factors entering into the design and execution of the building. It is in assisting business organizations to formulate such programs that the management engineer has found in recent years a field of increasing usefulness. At all times recognizing the supreme importance of the function of architecture and the centralized responsibility of the architect, the management engineer collaborates with both the client and the architect in striving for the achievement of the ultimate desideratum of blending beauty with utility.

In the last analysis, the most searching test to which a special purpose office building may be put is the extent to which it retains its effectiveness with the passage of years and the changing operating requirements of the organization which it houses. A minimum of annual expenditure for physical changes should be required and the sums actually disbursed may be regarded as an index to the quality of the planning. Beyond this, if it is definitely established that year in and year out clerical operating costs show a definite downward trend, the ability and vision, technique and experience which entered into the original planning of the building must be credited with a large share in accomplishing such a result.

With the highest possible regard for the value of beauty of design and effective treatment of materials, it must be emphasized that the special purpose office building is but a means to an end and that the end is the attainment of enhanced operating results.

OFFICE FURNITURE

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Just as the major physical characteristics of an office, such as layout, ventilation and illumination, have an important bearing on the health and production results of workers, so is there a close relation between the furnishing of the office and the welfare and productivity of employees. For this reason chiefly, but also for the sake of the appearance of the office and in order to control cost, the selection of office furniture is a matter which deserves careful study and consideration.

Broadly speaking, three classes of office furniture may be recognized: (1) executive furniture, (2) special purpose furniture, (2) clerical furniture. Of these, the last group, because of the number of persons affected and the more regular and constant use of furniture by them, is vastly the most

important; for the same reasons, this group lends itself more easily to general treatment. This article, therefore, will merely touch on the first two classes, so as to give as much space as possible to the discussion of clerical furniture.

Executive Furniture. Under this head is included all furniture to be used by the officers and directors of a company as well as by certain other important executives. It is often a moot point as to where to draw the line in supplying individuals with executive-type furniture but that is a matter of policy and organization, as well as of cost. Executive furniture should be used in the more important private offices, but not necessarily in all private offices; furthermore, executive furniture may often be used in open spaces, such as on the platform or main floor of a bank.

No principles can be laid down regarding executive furniture, as choice is governed largely by appearance which, in the last analysis, is a matter of individual taste. Some companies even go so far as to permit each executive to select his own furniture, with little or no guidance or control. This practice is not generally advisable, however, for it is difficult if not impossible under such conditions to convey an impression of unity and harmony. The best results will be secured if the purchase of executive furniture is entrusted to a central agency which will be governed by approved general standards in attempting to express the spirit of the organization in the selection of the furniture. It is desirable, however, that executives be permitted to have final approval of all furniture for their use.

Special Purpose Furniture. In many large offices, particularly in cases in which companies occupy their own buildings, space is set aside for such purposes as reception rooms, lunch rooms, rest and recreation rooms, auditoriums, libraries, medical departments, etc. The furniture to be used in these rooms is of such special character that it cannot be treated in this article but its purchase, also, should be entrusted to a central agency and governed by approved company standards, so that its quality and appearance may be in conformity with those of the general furnishing of the offices.

Clerical Furniture. As contrasted with executive and special furniture, the selection of which is controlled largely by its appearance, clerical furniture should be judged principally by its utilitarian qualities. This does not mean that the question of appearance should not be considered in the selection of clerical furniture any more than that the subject of utility should be neglected in the purchase of executive furniture. It implies, however, that clerical furniture should be regarded as an integral part of equipment for work and that the same study should be given to its suitability for this purpose as is given to the fitness of tools and machines. The large mass of clerical workers sit nearly all day at one type of work. The chairs on which they sit and the desks, tables, or files at which they work may help or hinder them in the performance of their tasks and may prove beneficial or injurious to their health, depending on their adaptation to the requirements of work and worker.

Need for Standardisation. It is well, therefore, to give sufficient study to the subject of clerical furniture so that correct solutions may be found to the problems involved and, once these have been reached, to establish

standards based thereon which will control the selection of all clerical furniture thereafter, subject of course to the findings of further investigation. There are many advantages to such standardization in addition to the fact that it ensures the use of the most fitting types of furniture for the purposes in question. In the first place it adds greatly to the appearance of the office to observe definite standards regarding materials, finish, height, and size. In the next place, it results in improved purchasing power. Moreover, it makes possible the interchange of pieces and permits of moving their location without disturbance to the layout. Furthermore, it simplifies the problem of replacement and minimizes delays in the delivery of orders.

The adoption of standard specifications governing office furniture does not necessarily imply that these should conform to the usual stock models. However, the number of furniture manufacturers is so large and the variety of stock carried is so great that it is usually possible to find any desired design stocked in some line. Whenever it is possible to purchase stock articles without sacrificing too much in fitness or utility, this should be done because specially designed or finished furniture is very costly and takes inordinately long to secure. Moreover, it is often very difficult to replace and, if the particular need should disappear or be modified, the furniture usually cannot be used for other purposes.

Material. Prior to about 1920 practically all office furniture was made of wood. Since then extensive use has been made of steel furniture and the trend in this direction appears to be increasing. Both materials are durable and practical and a sufficient number of stock styles and designs is available in each so that most clerical needs can be met. One of the principal advantages claimed for wood is that it is warmer in appearance and to the touch than metal; furthermore, wood is less subject to serious damage than steel. On the other hand, as steel furniture is made in standard sections, damaged parts may be readily removed and replaced.

From the point of view of fire hazard either material is satisfactory for general use in fireproof buildings.

A type of furniture which combines the principal advantages of both wood and steel is that made of a combination of both materials: steel frame and wood exterior. This combination, which is available in desks only, has much merit from the points of view of both utility and appearance.

Another material which should be mentioned is linoleum. This has found much favor as a top for clerical desks, particularly when made of steel. It helps to detract from the coldness of steel, affords an excellent writing surface and, at the same time, is easily cleaned and repaired. Although linoleum top desks are stocked in steel only, such tops can be added to wooden desks and this is a useful practice in restoring old and marred wooden furniture.

Finish. If wood is selected, there is a choice of three types of finish in stock furniture: oak, mahogany, and walnut. The last-named finish has only recently been made up in stock lines, however, and there is a more limited variety of types and makes from which selection may be made. Although mahogany and walnut are regarded as affording better appearance than oak, there are several advantages to oak furniture. It has a much lower light-absorption factor than either of the other finishes and therefore helps to

provide good illumination, particularly in large office areas. Furthermore, oak is considerably cheaper than the other finishes and can be more easily renovated.

In steel, up to the present time, olive green and mahogany have been the prevailing finishes; recently walnut has been added to these in most lines. All of these finishes have a high light-absorption factor. From the point of view of cost, the green finish is somewhat less expensive; there is usually no difference in cost between mahogany and walnut when both are stocked.

The major items of clerical furniture are listed below and will be treated in the same order:

- Desks.
- Tables.
- Chairs.
- Filing cabinets.
- Cupboards and storage cabinets.
- Safes and safe cabinets.
- Shelving.
- Lockers and coat racks.

In addition, reference will be made to the following general items of office furnishing:

- Floor covering.
- Window covering.

Desks. Three principal types of clerical desk are used in the office: (1) flat-top, (2) stenographic, (3) special purpose. The *flat-top desk*, which may be used for all general clerical purposes not involving the use of machines, is available in single or double pedestal styles or may be had in the so-called "corporation" type, which has only one or two small drawers on each side and may or may not include a center drawer.

As a rule, the mistake is made in offices of supplying desks which are too large for the needs involved. This not only adds to initial expense but is wasteful of floor space and often results in unduly crowding the office. The following flat-top desk sizes are suggested as economical and satisfactory for the uses described.

Use	Type and Size
For work not requiring the use of large-sized records or many papers at a time (often used for salesmen or investigators).	Single pedestal, 43 or 45 inches.
For work requiring the use, but not storage, of many papers.	Double pedestal, corporation type, 50 inches.
For work requiring the use of many papers and storage space.	Double pedestal, 50 or 55 inches.
For supervisors or for clerks using large records, binders, etc.	Double pedestal, 55 or 60 inches.

There is a tendency in the direction of decreasing the number of legs on standard, double-pedestal type desks by omitting the four center legs. This tendency, which was begun in wooden desks, has been developed chiefly in steel desks. It has the advantages of giving free leg room and of permitting better cleaning under the desk. Four-legged desks are available in the stenographic types described below as well as in the flat-top desk.

The *stenographic desk* may be had in three principal types (1) drop head, (2) solid top, (3) secretarial. The second of these types is not usually catalogued but may be secured in large quantities from manufacturers at reasonable cost. It may be made either in a low style with a continuous flat top, or in desk height with a sunken bed for the machine. The usual uses for the various types are indicated below:

Use	Type and Size
For continuous typing or stenographic work.	Single pedestal, drop head 43 or 45 inches, or solid top 50 inches.
For typing or stenographic work involving some clerical work.	Double-pedestal, drop head 50 or 55 inches.
For secretarial work or clerical work involving use of typewriter.	Double-pedestal, secretarial (machine in pedestal) 60 inches.

For clerical work entailing the use of certain types of machines or records, *special-purpose desks* must be supplied. Desks of this type may be had in stock designs for such purposes as the following: machine billing and book-keeping, comptometer and calculating machine operation, key punching, storage of card or ledger records, etc. As far as desks to house special machines are concerned, there is little latitude in choice of style or size but, whenever possible, it is well to adhere to the standard sizes provided for other clerical desks.

The storage of card or ledger records in desks is desirable in cases in which the records are handled almost exclusively by the clerk who does the posting. Wherever reference to such records must be made frequently by others, it is preferable to house the records in files and to supply an ordinary desk or table for the posting clerk. Special desks for the storage of cards or records may be had in tub or drawer type. Tub type desks are available for seated or standing posture and may be had either with fixed or with movable writing surface.

Tables are employed for a number of purposes in the office and their use is to some extent infringing upon that of desks. The chief uses of tables are enumerated below:

1. In place of desks for clerical operations requiring no drawer space.
2. For general utility and to serve as bases for visible indexes and machines not otherwise housed.
3. To supplement the desks of executives and department heads.

Wherever tables are used, their dimensions should conform to the standards established for desks. This will permit of interchangeability, improve appearance, and facilitate layout.

Chairs. One of the most important pieces of furniture in an office is the chair. On it, largely, is dependent the comfort and health of the clerical worker and therefore the effectiveness of his work. Great care should therefore be exercised in the selection of chairs for clerical employees. This is particularly so in the case of workers who are confined to their desks most of the time. The main features to which attention should be given are the following:

Revolving Type. For all kinds of clerical and stenographic work a chair of revolving type should be used.

Height. Chairs should always be adjustable as to height so that the occupant may maintain a comfortable working position.

Back. The back should also be adjustable so as to afford support and permit of relaxation.

Seat. The seat should be sufficiently large and should be scooped out so as to conform to the body.

Arms. Chairs should not be equipped with arms, except for the use of executives.

Casters. The use of a ball-bearing, swivel caster made of a material other than wood or metal adds greatly to the utility and comfort of a chair and saves wear and tear on the floor covering.

In addition to chairs for the use of clerical workers, two kinds of chairs are ordinarily used. The executive chair is of the revolving type, is equipped with arms and is supplied with either a perforated or upholstered leather seat and upholstered back. The side chair, for the use of visitors, may be of any straight type.

Filing Cabinets. The principal types of filing cabinets are (1) vertical, (2) horizontal, (3) counter-height, and (4) safe files. These may be had to house materials of various sizes, and great flexibility can be secured in building them up provided uniform standards are maintained.

Where the question of filing capacity is dominant, *vertical files* should be used. Where this is complicated by the factor of serving the public or by the requirement of a working surface, *counter-height units* are indicated. The use of such units often makes it unnecessary to build special counters of wood or other material, which have no utility aside from their use as counters and can seldom be reused when a change in layout is made. *Horizontal units* are practical where materials of various dimensions have to be housed in one stack; their use is usually reserved for executive offices. *Safe-files*, which are constructed to provide greater fire resistance than is afforded by the ordinary filing cabinets, are made in letter and legal-sized vertical units. They supply a need halfway between the filing cabinet and the vault for the filing of important documents which have to be specially protected against the fire hazard.

Cupboards and Storage Cabinets. Unless used in supply or record storage rooms, these should be of counter- or vertical-file height and should conform in material and finish to the standards established for filing units; otherwise they become unsightly. Their chief use in the office is to maintain the limited amount of supplies which must be kept on hand in the operating departments and to store books or valuable small machines overnight. Cupboards

may be supplied with hinged or curtain-type doors or may be had without doors.

Safes and Safe Cabinets. For the storage of valuable materials which must be protected against both fire and theft and at the same time must be readily available for use, safes or safe cabinets may be used. Both of these types of equipment can be secured in counter-height and can thus be joined with batteries of files to make a continuous counter. The use of safes and safe cabinets as a substitute for vault storage provides flexibility in layout and convenience in use.

Shelving. Great economy and flexibility can be secured in the storage of supplies and other materials through the use of sectional steel shelving. This may be built into stacks of any desired height, width, and depth, but a depth of twenty-four inches has been found to be the most practical. It is sometimes desirable, however, to use deeper units at the base, extending upward to approximately counter height, so that the upper surface of these units may be used as a working counter for clerical operations or wrapping. Sections of steel shelving may be transformed into cupboards by the application of hinged doors. Shelving may also be used to serve as book stacks.

Lockers. Where space permits it is desirable to furnish employes with individual lockers for their wraps. Such lockers are made of steel and may be had in one-, two-, seven-, and eight-compartment types. A depth of from fifteen to twenty-one inches is satisfactory; width and height vary according to the number of compartments. Single- and two-compartment lockers are usually built in batteries; therefore, in the purchase of this type of equipment, care should be taken to restrict the overall width of any battery to 54 inches or less, so as to insure easy handling and flexibility of arrangement. The provision of sloping tops for lockers is advantageous from the sanitary point of view and also because it prevents the placing of packages and newspapers on top of the equipment.

Where it is not feasible to supply individual lockers, coat racks with hangers and hat shelves may be provided.

Floor Covering. The usual cement floors of offices require a special floor covering to adapt them to daily work. The following tabulation indicates suitable types of floor covering for the various areas mentioned

Area	Material
Reception space.	Rubber, linoleum or mastic tile; carpet.
Interior corridors.	Linoleum; linoleum or rubber tile; mastic or mastic tile.
Clerical offices.	Same as corridors.
Executive offices.	Rugs over wood, cork or linoleum; cork; carpet.

Window Covering. Better control of daylight illumination can be obtained by the use of a special type of blind than by that of the ordinary window shade.

The Venetian blind, a type in which the light is transmitted through the spaces between adjustable wooden slats, makes it possible to secure sufficient illumination and ventilation even when the blind is completely drawn. The slats may be deflected upward or downward to control glare.

Another type of blind which has proved satisfactory is one which is made of accordion-pleated fabric and is controlled by cords which make it possible either to raise the blind from the bottom or to lower it from the top to any desired position. In this way light is permitted to enter from either the top or the bottom of the window, depending on the angle of the sun rays.

The use of draperies at windows is suitable only in executive offices and special areas such as reception rooms, lounges and dining rooms.

In concluding this article, a word of general guidance regarding the selection of office furniture should be given. Although the question of economy will always exercise a controlling influence on this subject, within the limits set by this consideration, four major elements should be kept constantly in mind: *adaptability, simplicity, durability, and good taste*. If these characteristics are present, and *uniform standards* are observed, the furnishing of the office cannot fail to be an asset in improving clerical performance and in making the working areas attractive to those who spend their days in them, as well as to outsiders who have business with the organization.

OFFICE MACHINES AND APPLIANCES¹

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Scope of the Discussion. Before proceeding to a specific discussion of the various machines available, what they are, what they do and how they do it, the basis upon which this material has been prepared should be made clear. First, instead of citing numerous applications of various machines to specific cases, the discussion has been confined largely to statements regarding the machines themselves, what they will do, and how they do it. This has been done because it has been the writer's experience, that while rather dramatic accounts of machine installation may make very interesting reading such discussions are not especially helpful in working out one's own particular problem. In other words, it is much more important that one know that there is a machine made especially to perform a certain task than it is to be told that a certain public utility company, manufacturing company, retail store, or bank now has only eleven clerks doing a particular job with the aid of machines which formerly necessitated the employment of eighteen. Second, for obvious reasons manufacturers' names have been omitted throughout. Third, no attempt has been made to describe in minute detail the purely mechanical operation and parts of the various machines. Fourth, while an attempt has been made to secure information from all

¹ Certain sections of this paper are summarized by permission of the publishers from *The Office Appliance Manual*, ed. by W. H. Leffingwell

manufacturers regarding their equipment, no one is infallible and it therefore may be that certain devices with which some readers are familiar are not mentioned. Last, the whole point of view has been to attempt, not the preparation of the encyclopedia of office appliances, but rather a survey of what the field offers. For this purpose the following classification has been used:

1. Calculating machines.
2. Billing machines.
3. Bookkeeping machines.
4. Electric accounting and tabulating machines.
5. Cash registers and coin handling machines.
6. Dictating machines.
7. Typewriters.
8. Duplicating machines.
9. Addressing machines.
10. Time-recording machines.
11. All others.

Calculating Machines. In this group are included only those machines whose sole work is calculating of one sort or another. Machines in which calculation is a subsidiary function of the principle operation, such as billing and bookkeeping machines, for example, which automatically add, subtract, extend invoices, figure discounts, etc., are included in the latter group.

Adding Machines. The simplest and best known type of calculating machine is the adding machine. While subtraction, division, and multiplication can also be done on certain types of so-called adding machines, by the use of reciprocal numbers, etc., it is assumed that operations requiring only addition are to be performed. Adding machines may be classified as follows:

1. Non-listing type.
2. Listing type.
3. Full or standard keyboard type.
4. Ten-key type.
5. Hand-lever type.
6. Automatic electric type.

A number of machines now on the market offer combinations of the above types which will be described presently.

Non-list Type. This is the simplest type of straight adding machine. Each digit is represented by a separate column. Models containing from seven to seventeen columns may be secured. As each key is depressed, counters in the machine are turned as the lever is pulled down, in the case of the hand-lever type, or are actuated by electric contact, in the case of the automatic electric type. The total accumulates at either the top or bottom of the machine in the space provided. To clear the machine it is usually necessary simply to depress the total key which automatically returns all figures in the total column to zero.

Advocates of the non-list type of adding machine claim that an experienced operator can add a column of figures twice as fast as one person alone can both operate the machine and then check back the figures appearing on the

listing tape against the original source. On the other hand in many cases it is desired to file the adding machine tape as a permanent record with papers to which it relates.

Listing Type. The principle of operation and use is the same in this type as in the non-list type except that each number is written on a tape together with totals.

Full or Standard Keyboard. Every adding machine is of either the full-keyboard or ten-keyboard type. The full-keyboard type contains as many rows of keys, each from one to nine inclusive, as the digit capacity of the machine. The chief advantage of this type is simplicity of operation and understanding. This type is most frequently found in smaller offices where a number of people have occasion to use an adding machine, but where there is no high degree of specialization.

Ten-key Type. In the ten-key type each key represents a digit, but the mechanism automatically takes care of the numerical or columnar order. While there are a number of straight adding machines of this type on the market, the most frequent use of the ten-key mechanical principle is in combination with other appliances such as the billing machine, bookkeeping machine, etc.

Hand-lever and Automatic Electric Types. Every adding machine is either of the hand-lever or automatic electric type. In the hand-lever type the lever is pulled down each time after the number is set up in the machine, while in the automatic electric type the slight touch of a bar actuates the mechanism. Obviously the electric type requires less manual effort and less time and it is therefore to be expected that this type is most frequently used where a large volume of work and a high degree of specialization result in the continual use of the machine by a single operator or a group of operators. In the smaller office the hand-lever type is much more frequently to be found.

Combinations of Various Types. For the sake of simplicity and clarity each type has been discussed separately. It should be emphasized however, that every machine represents a combination of two or more of the types mentioned. Thus we find the list machine in either the hand-lever or the automatic electric type, the full-keyboard or ten-key machine in either the list or non-list type and with either hand-lever or electric motivation. The kind of work to be done, the volume of it, the degree of specialization, and the cost are the controlling factors in deciding which type and manufacturer's make is best suited to a particular kind of work. Adding machines are one class of office equipment in which standardization on one manufacturer's make throughout the entire organization is not necessarily the best practice, in fact, in many large companies one finds a number of makes of adding machines, each chosen because of its adaptability to the particular work of the department in question.

Other Calculations. As previously mentioned, so-called adding machines may be and are widely used to perform many calculations other than straight addition. By the use of reciprocal numbers, etc., subtraction, multiplication, and division may be performed with as much ease, although not necessarily as quickly, as addition. Therefore, in considering the purchase of a calculating machine which is built for the specific purpose of sub-

traction, division, and multiplication, as well as adding, one should carefully consider the number of such calculations to be made, the relative time required to make them compared to the time required if a straight adding machine is used, etc. To buy a direct subtraction machine or one which will multiply and divide automatically, simple because there are such operations to be performed in the office may be unwise, unnecessary, and expensive.

Characteristics. Three points characterize the calculating machine field, so far as operation is concerned. First, machines are of either the direct key-driven or lever-operated type. In the direct key-driven type the value of the keys is added as the keys are depressed, and the total appears on the dials. In the lever type (either hand or electric operated) the lever must be moved after the keys are depressed. Second, calculating machines are the full-key rather than the ten-key type. Third, and this is a difference sometimes forgotten, the calculating machine is a non-list machine. When used in combination with other operations such as the extension of an invoice in the case of a billing machine, for example, the printing of the amount of the charge may be said to correspond to the listing function. The machine which does only calculation, however, is the non-list type.

Uses. The field of calculating machines is so broad and well known that there is no need to cite examples here. Wherever the volume of work and the degree of specialization warrants their use, calculating machines perform an indispensable service. Railroads, banks, public utilities, stores, manufacturing plants find innumerable uses for such machines in their billing, bookkeeping, cost accounting, engineering and sales departments. However, in the last four or five years there has been an increasing tendency to combine the calculating machine function with others, such as bookkeeping, general accounting, cost accounting, analytical work, etc., in which the results of the calculation appear in written form on a permanent record, such as a bill, journal, a customer's account, a sales analysis sheet, a cost sheet, etc. Consequently, while it would not be true to say that the field and use of calculating machines is decreasing, it is most important to bear in mind, if one is considering the purchase of such a machine, that such combinations as have just been suggested apparently represent the trend in this field. With the tendency very distinctly towards the greater use of machinery in office work it is not unnatural to find such combinations developing and to expect that they will continue to develop to a still greater degree as time goes on.

Billing Machines. The modern billing machine is a combination type-writer and calculating machine. It is possible, through the proper collation of forms, to make additional copies for other purposes such as packing slip, shipping copy, manufacturing department copy, express receipt, etc. Furthermore, sales distribution by various classifications, account analysis and other distribution or analytical work can be performed at one writing in many cases.

Types of Billing Machines Available. Billing machines may be classified as follows:

Cylinder type, in which the forms are fed around a cylinder in the same way that a letterhead, carbon paper, and second sheet are inserted and turned in an ordinary typewriter.

Flat-bed type, in which the forms are contained in a bed over which the writing unit moves.

Machines which do not compute but merely type.

Machines which type, add, and subtract.

Machines which type, add, subtract, multiply, and divide.

Machines which use cut forms.

Machines which use continuous-length forms.

As in the case of the classifications used for adding machines, each machine is really a combination of two or more of these various types such as flat-bed machines which type, do all calculations, and use continuous length forms, cylinder-type machines which add and subtract only in addition to typing, and use cut forms, etc. Obviously the cylinder type which merely writes and does no calculation of any sort and uses only cut forms is fundamentally nothing more than a typewriter with the stops adjusted to correspond to the width of the various columns on the form. On the other hand the type which writes, does all four kinds of calculations, and can be arranged for writing many forms at one time, including analytical and classification work, is a machine capable of combining many operations in one, whether these were formerly performed by hand or by other machines. Such types of billing machines are available in both the cylinder and flat-bed styles.

Advantages of Using Billing Machines. The advantages of using billing machines are numerous, particularly those types which combine typewriting with at least addition and subtraction, if not multiplication and division. In the first place the machine is both a typewriter and calculating machine, as it is possible to use each mechanism separately. Second, by the proper collation of forms as high as eighteen copies may be made at one writing, thus saving much subsequent rewriting and copying which it is necessary to do if hand methods or typewriters are used for preparing bills. Third, calculations are known to be correct because they are mechanically performed. Billing machines have automatic devices which lock the machine when an error in posting has been made. Fourth, various distributions may be made at the same time that the bill is being written by means of totalisers or registers which accumulate vertical totals by columns in addition to the cross computers.

Department stores, public utilities, manufacturing companies, both large and small, wholesale concerns, and railroads use billing machines to great advantages. Instead of the old method, under which everybody who could operate a typewriter "got on the bills" at the end of the month, and subsequent entries to other accounts and statistical records were long delayed, the billing machine not only keeps the billing work currently up to date, but writes many other records at the same time with greater speed and accuracy.

Bookkeeping Machines. In discussing bookkeeping machines, care must be taken to distinguish between those machines in which the fundamental characteristic is the use of ledger sheets of various kinds and what some manufacturers have termed "electric accounting," or machines in which punch cards take the place of ledger sheets. For the purpose of this discussion, we shall refer, under the classification of bookkeeping machines, to

those machines in which a ledger card or sheet of some kind is used, leaving for the following section, Electric Accounting and Tabulating Machines, those machines which use punch cards as a basis.

Fundamental Characteristics and Principles of Operation of Bookkeeping Machines. Bookkeeping machines are not unlike billing machines in that fundamentally, with the exception of the bookkeeping machine of cash register origin, they represent a combination of typewriter and calculating machine. In fact, a number of manufacturers who advertise machines for billing work and also bookkeeping machines, really make but one machine which can be used with slight variation in detail for both billing and bookkeeping work. Again, as previously explained in connection with billing machines, the fundamental principle of operation is the writing of a number of records or forms at once, thus eliminating the copying necessary with hand work and through mechanical calculation and devices which lock the machine when an error has been made, insuring accuracy of posting.

Variety of Uses Obtainable. Among the records for which bookkeeping machines may be used are the following:

Purchase journal.	Accounts payable ledger.
Distribution journal.	Remittance advice.
Sales journal.	Proof journal.
Cost of sales journal.	Cost sheets.
Cash received journal.	Stores records.
General journal.	Inventory records.
Accounts receivable journal.	Payroll records.
Customers statements.	

In using the machine for accounts receivable work for example, the accounts receivable ledger is posted, the customer's statement prepared and a proof journal made all at the same time. The proof journal, obtained as a by-product of the posting of all accounts, provides a complete permanent record and proof of all items posted. Charges, credits, and balances are automatically accumulated for proof, and the totals are printed in the proper columns on the proof journal. Credit balances are automatically printed in red figures on original forms and also marked with a symbol "CR" which shows on all copies.

Purchase and payment records are handled in the same manner as accounts receivable. If an accounts payable ledger is maintained (providing a permanent record of purchases against which vendors' statements may be checked to prevent duplication of payments), a remittance advice may be prepared as each accounts payable ledger account is posted. Transactions and journal totals which affect the asset, liability, revenue and expense accounts in the general ledger may be posted daily, if desired. Thus financial statements may be compiled quickly and accurately, because all accounts will be posted and proved to date. In the case of stock records where it is desired to keep a record of both quantities and values both by units and totals, bookkeeping machines will be found extremely useful. The machine extends a new balance of both quantity and value with each posting, affording a perpetual inventory.

The machine automatically accumulates the total quantity and total value of all items posted, which provides proof that all items have been posted, and none posted twice.

Multiplying the quantity balance by the average price on the ledger proves (1) the pricing and figuring of the requisitions or other posting media, (2) that postings were made to the right account, and (3) that all new balances are correct. Proving is facilitated by using the proof journal because the postings on the journal can be verified while other postings are being made. However, the proof journal can be eliminated, if desired, by offsetting the affected ledger sheets when posting so that the proof calculation can be made directly from the account.

Bookkeeping Machines of Cash Register Origin. The bookkeeping machine of cash register origin differs from other bookkeeping machines both in appearance and operation. Instead of the usual typewriter cylinder or flat-bed type with the writing unit above, this machine consists of a bank of keys very similar in appearance to a cash register. One set of keys is for debits, another for credits, the rest for balance, total, subtotal, error, etc. In place of the cash drawer, however, there are two horizontal writing surfaces, one having place for the insertion of a card or cards for posting and the other containing a continuous roll or audit sheet on which are automatically posted all entries made by the machine.

In using the machine for accounts receivable work for example, the old balance as shown on the customer's ledger card is picked up as is the case with other bookkeeping machines. Both card and statement are then inserted in the machine, the amount to be posted is set up by depressing the proper keys and the machine operated. As the figures are printed on the ledger card and statement, they are also printed on the audit sheet, thus giving an itemized journal or record of all transactions passing through the machine. The balance is then secured by depressing the balance key, which automatically adds or subtracts from the previous balance. The new balance is then printed on the ledger card and customer's statement.

Where installment sales and payments are handled, this machine is particularly useful, especially if the customer has a payment book of some sort which he keeps, as is usually the case. In this case the ledger card and the book are inserted in the machine together, the amount of payment recorded, the book returned to the customer and the ledger account to the file. Savings banks, building loan associations, hotels, personal loan companies, retail stores, and many other lines of business in which installment payments may be made either by check, by mail, or in cash by the customer personally, have found this machine particularly useful.

Advantages of Bookkeeping Machines. In addition to the usual advantages secured by the use of proper office machinery, bookkeeping machines have made one outstanding contribution to modern accounting and office management, namely, the virtual elimination of tedious hours of overtime at the end of the month and year on the part of bookkeepers and clerks. Bookkeeping machines make it possible to keep all accounts posted up to date and constantly in balance which in turn enables the preparation of statements whenever they are needed. This kind of day to day control alone, to say

nothing of greater accuracy, speed and better appearance, more than justifies the increasingly wide use being made of bookkeeping machines.

Electric Accounting and Tabulating Machines. During the past five years an increasingly large number of business organizations have come to realize the fact that management and control are based first of all on facts. Subdivision of accounts, detailed analysis of sales and manufacturing expenses, break down of items formerly carried as one lump-sum total are just one or two of the many things being done along these lines. To get the facts easily, promptly, and economically, however, necessitates the use of machines. The manufacturers of tabulating equipment have not been slow to recognize these new demands and to prepare themselves for them.

Tabulating equipment is of two distinct types. First and perhaps best known is that which uses so-called punch cards or tabulating cards as a basis. Second, there is a machine again of cash register origin as in the case of the bookkeeping machine just described, in which banks of keys similar in appearance to cash registers are depressed and printed results secured.

Uses of the Equipment. Both types of equipment are used for two distinct purposes, namely, outright statistical and analytical work as well as general and cost-accounting work. Analysis and classifications of sales by salesmen, by price lines, by territories, by classes of product, by profit lines, by kind of business sold constitute some of the uses to which such equipment is being put in the sales field. Large department stores use such equipment extensively for such things as inventory analysis and classification, charge account analysis showing the number of charge customers who bought in five departments only, six to ten departments, eleven to fifteen departments, etc., what they spent per month or six months, etc. Life insurance companies have a wide variety of uses for such equipment for purely statistical purposes.

More recently, however, considerable use of tabulating equipment has been made in the field of general and cost accounting. In many companies, for example, a set of tabulating cards comprises the accounts receivable ledger. A card is kept for each customer showing the sales order number, invoice number, date of sale, kind of product sold, amount of the sale, date paid, discount taken if any, open balance, etc. Accounts payable records are kept in the same way. Stock records, payrolls, general expense accounts are similarly handled. In the field of cost accounting, tabulating cards showing the amount and value of direct labor and direct material used on each job or lot, as well as the burden applicable to the job, the total amount of manufacturing cost, etc., have replaced cost sheets or have at least supplied the details. Labor and material tickets may be similarly handled. It is because of this more recent development in the use of tabulating equipment wherein manufacturer and user alike have gone far beyond the original idea of using such equipment for statistical and analytical work only, that electrical accounting and tabulating are discussed together.

Fundamental Principles of Operation of Tabulating Equipments Which Use Punch Cards. Tabulating equipment using punch cards consists in every case of three separate machines, namely, the key punch either electrically or hand operated which punches the holes in the tabulating cards, the sorter which sorts the cards passed through it into various groups depending upon

the position of the holes punched in the cards, and the tabulator which calculates and which in some cases records and prints the results.

The principle of the tabulating or punch card is simple. The card itself is divided into various so-called fields in each of which there are vertical columns of figures numbered from zero to nine. The figures applicable to each field are recorded by punching out holes in the appropriate columns. For example, in the case of stock records, the quantity received, the quantity issued, the balance on hand, together with the values and dates in each case, the invoice number on which the material was purchased, the date the order was placed, production or sales order number or material requisition number are indicated by punches in the proper holes. One of the latest developments is an arrangement whereby the key punch may be connected with a standard typewriter or posting machine so that a bill or other typewritten record may be made at the same time that the card is being punched.

The purpose of the sorter is automatically to select or sort all cards in which a particular hole number has been punched. Only one column can be sorted at a time. The cards are passed through the machine and those having holes punched in the column for which the selector or pointer has been set are automatically dropped into the containers or trays provided, the balance of the cards accumulating at one end of the machine. The trays are either vertical or horizontal. While it is frequently necessary to pass the same cards through the machine several times in order to secure the desired arrangement due to the fact that the machine will select only one column at a time, this is not a serious drawback as the machine can sort at the rate of 400 cards per minute.

After the cards are sorted as desired, they are passed through the tabulating machine and subtotals and totals secured either from counters or printed direct.

Advantages and Disadvantages. The outstanding advantage of the tabulating card system is that information can be analyzed and rearranged in numberless different ways automatically and speedily without the necessity of rewriting, rearranging, and reclassifying. Economy of space is also an important item. For a business which has enough transactions or postings to keep the equipment reasonably busy, information of many kinds, or the same information classified, in many ways, can be secured most easily and economically. On the other hand it unfortunately appears to be true that in some cases, at least, an installation of such equipment should never have been made, due to the fact that the various analyses made from the cards are never made use of by the executives in any more than a superficial way at best. The fact that one can secure all manner of classifications from a single card seems to have an appeal to many executives who do not stop to think, when considering the purchase of the equipment, just how much use they are actually going to make of the information after it has been presented to them. One manufacturer's representative with whom the writer talked told of an installation he had recently made in which he had frankly said to the prospect that he did not advise the use of the equipment because he could not see that the results could be made sufficient use of to justify the cost. The reply was "That's all right, my friend Mr. Jones has one of these

machines in his office and I don't want him to think that I am less progressive than he is."

It should also be remembered that with the exception of the largest and most expensive types of tabulating equipment, no written record other than that indicated by the holes in the cards themselves is made and that all the calculations to secure figures to be punched out on the cards must be made on other machines. This latter point is mentioned merely to contrast its operation and results with certain kinds of bookkeeping machines which both write and calculate.

Tabulating Machines of Cash Register Origin. These machines, sometimes called machines of the ticket-producing type, have a keyboard very similar in appearance to a large cash register, as already explained in connection with their use as bookkeeping machines. In fact, by locking one key the accounting or posting machine can also be used as an analysis machine if no more than eighteen classifications or totals are needed. However, due to the fact that they are not descriptive writing units, as is the usual bookkeeping machine, but are equipped with a number printer which prints descriptive numbers or symbols which may be used to identify each transaction, their widest use has been as analysis machines.

A total of twenty-seven different classifications can be secured, each with subtotal and grand total. The large number of totals with which these machines are provided eliminates the necessity of hand sorting of the records from which the information is taken. The machine is electrically driven, no manual work other than that of depressing the keys being necessary. At the base of the keyboard an audit-sheet continuous-roll form is provided. This contains a detailed record of each transaction enabling the operator to verify at sight the correctness of the previous thirty-four transactions. A series number is also automatically printed on this audit sheet, so that any item may be traced and the total number of transactions handled easily ascertained.

Machines of this type have found wide use where the total number of classifications needed in any one analysis does not exceed twenty-seven. Study of a particular situation frequently shows that while a considerably larger number of classifications may be at first thought necessary, a large per cent of the total items to be handled are in very few groups, often much less than twenty-seven in number.

The obvious advantage of this type of machine as contrasted with tabulating card equipment for analysis work is that only one operator and one machine are necessary, compared with three machines. On the other hand, tabulating equipment of this kind is not as flexible and furnishes no permanent record of the operation comparable with the completed punched tabulating card, other than that made on the continuous-roll audit sheet.

Cash Register and Coin-handling Devices. Cash registers are made in both print and non-print models and are either key set or lever set in mechanical operation. The printer type may be secured in any one of four models.

1. *Total Printer.* This type provides a total record which may be printed at any time upon a slip of paper. In addition to the total of sales, there are

printed on the slip the date, the number of transactions, the number of times the "no-sale" key was used, the number of times the adding and counting mechanism was reset to zero, and the number of the machine. At the end of the day the printed slip may be filed as a permanent record of the day's business.

2. *Detail Printer.* The detail strip shows the amount of sale of each item, the nature of the transaction, and the salesperson's initial or department symbol. The register of this kind is equipped with one or two total-adding counters which print the total of the accumulated amount.

3. *Detail and Receipt Printer.* The detail and receipt printer is composed of the same characteristics and features as the detail printer but has in addition the receipt-printing device which issues a ticket or receipt to the customer. The receipt bears the total of the sale, transaction number, and date of sale. The detail and receipt-printing type of cash register is operated by motor or hand power after the amount keys are depressed.

4. *Detail-total Printer.* The register of this kind prints and adds the items of sale, then prints and records the total. This register retains a detailed record and issues a receipt giving the itemized sales and the total.

Coin-handling Machines. Coin-handling machines may be discussed under two heads, namely, coin-changing devices and machines especially built to handle change in bulk.

Coin-changing Devices. The coin-changing machine consists of three essential parts, the coin tray or the slots at the top of the machine in which the various denominations of change are kept, the keyboard consisting of keys, one row for each unit, which when depressed release the desired number of coins, and the coin chute or the channel through which the coins fall. The type of keyboard is the distinguishing characteristic of the two types of machines available. In one type the machine delivers the amount indicated by the key depressed, i.e., 17, 42, 59 cents, etc., while in the changer type the machine computes and delivers the difference between the amount shown on the key which is depressed and \$1.00. The 17 cents key in this case delivers not 17 cents but 83 cents.

Coin-handling Devices. Coin-handling devices are of three kinds, namely, coin separators, or machines which simply sort mixed change, coin-counting and packing machines, which count and wrap coins from 1 to 50 cents, one denomination at a time, and coin separators and counters which separate, count, and wrap all in one operation. Tokens may also be handled in the same way. Many separators utilize centrifugal force by throwing the coins from a revolving disc into various-sized slots as the disc turns. Others work on what is essentially the sieve principle. Machines are either hand or electrically driven. Some machines pack the counted coins in paper wrappers or tubes, others load it in bags.

Dictating Machines. The dictating-machine system, by means of which the voice is recorded on a wax cylinder and later transmitted back to the typist, consists of three separate machines, namely, the dictator or dictating machine, the transcriber, and the shaver. The dictator or correspondent uses only the dictating machine, the typists use only the transcriber, while the office boy is usually king in his own right of the shaver.

The Dictating Machine. By means of the dictating machine the voice is recorded on a wax cylinder placed upon a flexible mandrel, or cylindrical spindle, which is rotated by a small electric motor. The vibrations of the dictator's voice are recorded on the cylinder by the process of engraving on the wax surface.

The machine is small and occupies little space, so that it may be placed on the dictator's desk or on a stand at the side of his desk. If the dictator is interrupted, or if for other reasons he wishes to have repeated what he has just dictated, he may listen to his own words by throwing a lever from the dictating position to the reproducing position.

The Transcribing Machine. Although similar to the dictating machine in appearance and identical in fundamental construction, the transcribing machine is entirely different in function. It reproduces word for word what has been dictated upon a cylinder.

Beginning the operation of the machine the typist places the receivers on her ears, touches the control device, and listens to a number of words. She has complete control of the machine and may cut off the dictation while typewriting the words she has heard. Any word or phrase that the operator does not catch the first time may be repeated as often as necessary.

The Shaving Machine. This machine operates upon the same principle as a lathe where the object is mounted on the machine and rotated, while a tool thrust against it shapes it down, usually to some circular form. In the case of the shaving machine a cylinder is placed upon the mandrel and the knife adjusted to shave off the engraved surface.

The cylinder is placed on the mandrel just as it is on the dictating and transcribing machines. As the knife moves along the cylinder, it shaves off a very fine layer of the wax, thereby making the surface of the cylinder perfectly smooth so that it can be used again for dictation. Each cylinder may be used over and over again—often as many as one hundred times.

Uses and Advantages of Dictating-machine System. Unlike many other office machines, the dictating machine is used in any kind of business, of any size, and in any department. While the more usual applications are found in the handling of office correspondence, there are many other uses which can as easily be made of it. For example, the Irving Trust Company, of New York City, installed a dictating machine in the automobile used by the representatives of the Bond and Mortgage department. It is the duty of these men to go about inspecting properties on which the bank has made loans. Instead of making notes after they finish an inspection or trying to remember all the details until the end of the day, the inspector simply dictates his reports in the machine while being driven from one location to the next. When he returns the cylinders are given to a transcriber and the typewritten reports are ready for signature at the end of the following day.

Considerable use is made of the dictating machine in recording important telephone conversations. Again, instead of trying to remember all of the details of an arrangement which may be made over the telephone the executive may dictate to the machine at the same time that he is talking over the telephone or immediately thereafter. The cylinder is then transcribed later at the convenience of the operator.

Typewriters. It perhaps may seem unnecessary even to mention typewriters in this discussion. Certainly we all know what they are and what they do. The standard typewriter, the noiseless, the portable, and the electric are all familiar. Combinations of the typewriter with calculating machines in the form of bookkeeping, accounting, and billing machines have already been mentioned. The use of the electric typewriter principle in conjunction with the writing of form letters on a duplicating machine will be discussed under the heading of duplicating machines presently. The use of the typewriter in conjunction with the telephone correspondence dictation has received considerable publicity recently. The development of typewriters connected with long distant telephone wires, for the rapid transmission of lengthy messages between offices located in distant cities, is merely another adaptation of the same fundamental mechanism. Suffice it to say, therefore, that of all office machines the typewriter is without doubt the most extensively used. It was the forerunner of most of the other office machines which in turn themselves are now in wide use and it seems destined to continue in predominating leadership for years to come.

Duplicating Machines. The typewriter, just discussed, is of course a form of duplicating machine. Similarly, addressing machines which are taken up in the following section, may be classified under the general heading of duplicating equipment. For our purpose, however, we shall define duplicating machines as those whose function it is to reproduce exact copies of printed, typewritten, or hand-written matter for any purpose. This definition therefore, includes the reproduction of such things as notices, letters, bulletins, reports, charts and graphs, maps and drawings, etc.

Kinds of Duplicating Processes. Five processes of making multiple copies are used, namely, stencil, gelatine, typesetting, automatic typewriter, and photographic.

Stencil Duplicators. Exact reproductions of typewritten work, as well as of maps, charts, in fact, any kind of drawings or illustrations, can be had with stencil duplicators. The stencil is placed in a typewriter from which the ribbon has been removed so that the letters are cut instead of being printed, thus exposing the fibers through which the ink can pass when the stencil is placed on the machine. By means of a stylus, illustrations and drawings and handwritten matter may be stenciled.

The design of these duplicators embodies a hollow, perforated, revolving cylinder partially covered with an ink pad. The ink is applied to the inner surface of the cylinder and passes through the perforations to the pad and openings of the stencil.

To make the copies, the stencil is fastened to the cylinder over the ink pad. A turn of the handle causes the cylinder to revolve, thus bringing the stencil in contact, under light pressure, with the paper which has been fed to the machine. The ink, by capillary attraction, passes through the letters or designs cut in the stencil to the paper, making an impression. Removable cylinders, allowing for the substitution of another when it is desired to reproduce two colors, are found on various machines.

One machine is equipped with automatic feeding devices which bring a sheet of paper to the cylinder with each turn of the crank; others are fed by

hand. With the automatic duplicator, from 1,500 to 5,000 copies can be made in an hour.

Gelatin Duplicators. This class of duplicators makes copies by transferring the ink from a typewritten, handwritten, or drawn original to a duplicating composition which dissolves and holds the ink on its surface until all the copies have been run off.

When preparing the original, hard bond paper and a special kind of ink are used. This may be in the form of a duplicating typewritten ribbon, a duplicating ink, or even an indelible pencil. Different colors may be combined on one original.

This type of duplicator consists of a flat printing bed over which is stretched a gelatin-covered roll. After one surface of the roll has been used, a fresh one may be brought into position by the turn of a handle.

The original is placed face down on the copying surface and smoothed with the palm of the hand or a roller provided for that purpose. It is then lifted off, having left its impression on the gelatin. The blank sheets are placed one at a time on the gelatin surface and allowed to remain a few seconds until the imprint is made.

Typesetting Duplicators. Duplicating machines which utilize the typesetting principle are of two kinds. One prints from typewriter type, the other from standard printer's type, electrotypes, or plates. Certain machines combine both.

The letter, or whatever is to be reproduced, is set up in the typesetting unit which consists of three type banks mounted on a metal frame. A three-bank typewriter keyboard controls the electrically indexed die carrier which embosses the characters on a thin aluminum ribbon. The ribbon is cut off at the end of each composed line and the strips are pushed into position on the disc which fits over the drum of the duplicator. When a complete letter has been composed, the disc is placed on the drum of the duplicating machine and the letter run off. The strips are then removed.

When the type has been set, the printing segment is locked in place on the machine and covered with a broad typewriter ribbon. As the printing drum revolves, each line of type comes in contact with the paper as it passes over a rubber cylinder or platen, thus producing an entire facsimile typewritten letter with each revolution. A signature device signs each letter as it is printed. After the letters have been run through, the name and address are filled in on a correspondence typewriter, using ribbons that match in color the shade of the ribbon used on the duplicator.

Automatic Typewriters. This class of duplicators is designed to produce actual typewritten letters rapidly.

The machine consists of a standard typewriter mounted on and operated by an electric mechanism.

The mechanical movements are controlled by a perforated strip of record paper similar to a player-piano roll. This record is made on a specially designed machine which is part of the equipment. The perforator has a standard typewriter keyboard. The letters to be produced is first written by hand and from this copy the typist cuts the record on the perforator. Each perforation represents a character in the typewriter keyboard and is

reproduced by pressing down on the perforator keys. When the cutting of the perforations is completed, the perforated paper is cut off and the ends cemented together to form a roll, which is then placed on the drum, in front of the machine. In the drum are a number of lengthwise slots over which the perforations in the record paper rest. When the machine is started, the drum revolves, carrying forward the record paper which passes under the pins. As a perforation passes under a pin, the pin drops into a slot in the drum. By means of a mechanical connection this process actuates the typewriter keys as though by hand, and after all the perforations have passed over the drum once, the operator removes the finished letter and repeats.

The machine may be used as any standard typewriter, and at any point the operator may stop the automatic mechanism and typewrite, by hand, information of interest only to the recipient of that particular letter.

Photographic. Deeds, contracts, mortgages, maps, drawings, orders, letters, invoices, testimonials of all kinds can be reproduced in exact duplication.

The photocopying machine resembles a large camera. It is constructed to photograph direct upon sensitized paper which through a process of developing within the machine becomes the finished print. Directly below the lens of the camera and attached to the framework of the machine is a glass-top copy or subject holder. The material to be photographed is placed under the glass.

As the focusing is automatic, little skill is required on the part of the operator. The developing is automatic also. The sensitized paper is held within the machine in a continuous roll and is fed through the exposing chamber, the developing and "fixing" solutions, and then it is cut off at the desired length.

A new development is a machine which is widely used for photographing checks. The equipment for this service includes a camera that photographs checks, or other papers, on a roll of 16-mm. safety motion picture film. Accompanying the camera is a special projector with self-contained screen, on which enlarged negative images of the photographed papers can be projected at will. A 100-foot reel of film not much bigger than a package of cigarettes records 8,000 checks. As a check is dropped into the hopper, it touches the back of the hopper, which actuates the camera in the machine. Thus, by a single movement of the hand, a permanent photographic copy is made. An experienced operator can photograph checks at the rate of 125 a minute.

Field of Duplicating Equipment. In addition to the usual office applications, there are many other commercial uses for duplicating equipment. Cable wrappings, for instance, have the name of the manufacturer and the date printed at intervals of six inches. There are concerns who print their names and detailed information regarding different kinds of shingles directly on the sample shingle. Manufacturers of fabric gloves and mitts use such equipment to print trade-marks and sizes on the cuffs of gauntlets. Cap manufacturers print caplinings with the equipment. It is used to print and sometimes to overprint cellophane, glassine and ordinary paper bags.

One of the largest manufacturers of rubber goods and rubber footwear uses highly developed special equipment of this kind in its production department.

Advantages and Disadvantages of Duplicating Equipment. The advantages accruing to a company which uses duplicating equipment are numerous and obvious. Where many copies of a single letter, report, notice, etc., are needed, the use of a duplicating process of some kind is essential. The disadvantages, or perhaps one might better say dangers to be guarded against, are two. First, be sure that there is a sufficient volume of work to make the investment in a machine of your own economical. If the only need for a duplicating machine is to send out 100 bulletins a month to salesmen, or a similar number of letters to customers and prospects, it may be better to send the work out to a letter shop. This may seem elementary but there are many cases in which machines have been purchased with no more use for them than just this. Second, there is the difficulty of getting an exact match between the name and address and the body of the letter. A well-known company rendering a direct-mail service to retail stores obtains a high percentage of favorable responses not only because the letters are well written but because the greatest care is taken to make them mechanically right in appearance.

Addressing Machines. The phrase "addressing machine" is in some ways an unfortunate one in that it fails to indicate to the uninitiated the numerous tasks other than simply addressing which the equipment produced by addressing machine manufacturers will do. In fact, a number of the devices now available are more in the nature of duplicating processes than addressing. Under this heading may be mentioned such jobs as the heading up of customers records, inventory records, personnel forms, ledger pages, etc.; the writing of tax rolls and bills; the imprinting of short messages on postals, wrappers, folders, and swatches; the writing of dividend checks, pay checks, pay-roll sheets, pay envelopes, pay-roll receipts, stockholders' lists and voucher checks; the preparation of production orders, progress records, schedule and routing cards, time tickets; and the embossing or indenting of metal directory plates, machine name plates, motor name plates, employees ledger, shrubbery tags, cream-can tags, etc. More recently an addressing machine company has developed a duplicating machine which combines the preparation of a letter and the addressing of it through the use of regular embossed address plates in such a way that the principle disadvantage and difficulty of securing a good match between the name and address and the body of the letter has been largely overcome. This same company has just started the marketing of a combination printing and addressing machine, which, by passing blank paper from rolls over a series of imprinters, not only prints the body of the form, in regular printer's type, but addresses it at the same time. Your telephone bill is a specific application of this machine.

In connection with addressing, either for sales purposes or others, the manufacturers have developed selecting devices to a high degree. By attaching tabs to the plates or stencils, the machine will automatically select those names to which it is desired to send the mailing piece, passing all other plates through the machine without printing.

Kinds of Equipment Available. There are two basic kinds of addressing equipment available, namely, that which utilizes a metal embossed plate, and

that which uses a fiber stencil. Otherwise in general principles of operation both methods are similar. The metal embossed plate has, in general, found wider acceptance, especially in the larger companies where the letter duplication attachment feature, the selection device, and the new printing mechanism can be used to advantage. The embossing of the metal plate is done on the graphotype, a machine especially made for the purpose, while the cutting of the fiber stencil is done on an ordinary typewriter. In both cases the frame has space for a card on which is shown the same information that appears on the plate or stencil, thus permitting ready identification. In both systems the principle of operation is to pass the plates or stencils over an inking pad, depress them on the envelope or other paper on which the information appearing on the plate or stencil is to be copied, and then release and pass them on it into a tray or holder. Then the plates or stencils come out in the same order in which they are inserted. In each method the basic equipment may be operated either manually or electrically, although the larger attachments, such as the automatic selector, are available on electric operated machines only.

Attachments Available. Interesting as it might be space does not permit of thorough explanations of the mechanical operation of each attachment, although those who contemplate the installation of an addressing machine should consider such points carefully. We shall, therefore, merely list the various attachments available with a brief explanation of the main purposes of each.

Automatic Selector. A machine equipped with this device can be made to skip the printing of certain plates or stencils automatically as they are fed through. The operation of the selecting device is governed by removable vertical filing tabs or boss points in the case of metal address plates and holes or slots in the case of fiber stencils.

Cut-off. This device makes it possible to non-print certain portions of addresses. For example, a stencil or address plate may contain a customer's name, his address, and a salutation. When this stencil or plate is used to fill in a form letter, the name, address, and salutation are all printed. But when an envelope is addressed, the salutation can be automatically "cut-off" and only the name and address will print. Another common application of the cut-off is in the heading of pay-roll forms.

Dater. Some machines are furnished with an attachment which makes it possible to fill in the date at the same time that the addresses are run. When form letters, statements, invoices, etc. are handled by the addressing machines, the dater attachment is invaluable.

Duplicator. This attachment, furnished on certain machines, causes the address plate to be held in printing position for two impressions. It may be used, for example, for heading statements and addressing envelopes to each customer and printing the back and front of time cards.

Automatic Ejector. The ejector is found on certain small hand models. After a form is printed the automatic ejector removes it from the printing point, throwing it into a box at the side of the machine. This device adds considerable speed to the hand models for straight addressing.

Lister. This attachment is constructed to list names, addresses, or other data on proof, blank, and printed sheets, loose-leaf forms, checks, tags, and labels, automatically feeding the forms and automatically spacing the proper distance after each printing.

Hand Spacer. By means of the hand spacer it is possible to leave one or more blank lines at will so that data may be later written or typed between the addressing-machine impressions.

Numbering Devices. On some machines a number attachment prints either consecutively, in duplicate, or in triplicate from 1 to 999,999.

Repeater. The repeat attachment, provided on several models, prints any number of impressions from the same plate or stencil. Some machines are provided with a hand repeating device, others with a foot lever that permits the repeating of any plate or stencil at the will of the operator, while skipping or consecutively addressing the remaining ones.

Skipper. By means of this attachment it is possible to skip any addresses which are not to be printed. All plates, or stencils after printing or skipping, are automatically refiled in original order.

Signals. Some machines can be equipped with a signaling device to inform the operator when the printing of certain groups of names has been completed. It may be desirable, for example, that the operator be informed when all the names in one department have been printed on the pay-roll sheet, so that space can be left between the groups of names in different departments.

Automatic Envelope Feeder. Self explanatory.

Mailer Strip Lister. This attachment for the larger machines automatically feeds and addresses a narrow paper strip from a roll. This roll is later inserted in a mailer machine which cuts and pastes the addresses on publications.

Advantages and Disadvantages of Using Addressing Equipment. Some of the many uses of addressing equipment other than envelope addressing have already been mentioned. Any kind of business with a volume of work large enough to justify the cost of installation finds many uses for such machines. A sufficient volume of repetitive work, however, is essential. If on the other hand, the same name and address is to be used only once, or at most two or three times in a year, hand or typewriter addressing is more economical.

It is also to be remembered that despite efforts by the manufacturers to avoid it, the stencil or plate address on an envelope is usually quickly recognized as such by the recipient. Consequently many direct mail advertising men prefer to have their material which is going to prospects addressed by typewriter or hand, even at a higher cost. So much direct mail literature is thrown in the waste basket anyway, in many cases without even being opened, that advertising managers naturally wish to avoid anything which gives the impression of a mass production effort.

Time-recording Machines. Time recorders are of two general kinds, namely, those in which the card or paper is inserted in the machine as in the case of job cards, or time stamps and those in which the record is made on a paper wound around a drum which is located inside the machine, as in the case of the drum type of in and out recorder. Equipment is either mechanical or electrical.

Uses of Time-recording Equipment. The principle uses of time-recording devices are:

1. *In and Out or Attendance Record.* In this case the employee usually registers his time four times a day, when he arrives in the morning, when he goes out at noon, when he returns, and when he leaves at night. Either card recorder or drum dial recorder are used. The dial type has the advantage of making it very easy for the pay-roll department to make up the pay roll.

2. *Job Recorder.* The chief use of the job recorder is in the factory where it is necessary to know the time spent by each employee on each job number upon which he works during the day.

3. *Time Stamps.* Hand- and electric-operated time stamps for stamping incoming mail and other papers by departments or for the company on a whole are widely used. The paper is placed in the machine by the employee and the time recorded either to the minute by stamping, as for example, 9:13 a.m. or within a fifteen-minute period by a stamp which makes a clock-dial style of imprint on the paper. The day's date, month and year are also imprinted in both cases.

Other Office Machines and Appliances Available. In the foregoing discussion we have named the principle kinds of office machines and appliances, described briefly and non-technically their chief component parts and mentioned uses and applications. Yet there are more than a score of additional machines and appliances, many of which are to be found in every day use in almost every office, of which no mention at all has been made. Important as these are, space does not permit of anything more than a listing of them. Among these may be mentioned:

1. Check protectors, writers, certifiers, endorsers, cancellers and signers.
2. Autographic registers and manifolders.
3. Credit registers.
4. Scales.
5. Loose-leaf equipment.
6. Bailing presses.
7. Calculation rulers.
8. Coupon-printing machines.
9. Envelope moisteners.
10. Eyelet fasteners.
11. Floor-scrubbing and polishing equipment.
12. Folding machines.
13. Imprinting presses.
14. Multiple stamps.
15. Numbering machines.
16. Paper-cutting machines.
17. Paper punches.
18. Perforating machines.
19. Receipting coupon cutters.
20. Telephone indexes.
21. Ticket-marking machines.
22. Envelope openers.
23. Hand stamp affixers.
24. Parcel-post machines.
25. Sealing machines.
26. Combined sealing and stamping machines.

27. Metering permit machines.
28. Non-metering permit machines.

Conclusion. A discussion of office machines and appliances would scarcely be complete without some reference to the question of selection, replacement and obsolescence. What is the best practice in regard to selection? Are there any tests which can be applied to three manufacturer's makes of book-keeping machines, for example, which will clearly indicate the one best suited to the work to be done? When is an office machine obsolete? Assuming no changes in basic mechanical features—which incidently is not as broad an assumption as some equipment manufacturer's advertisements would sometimes lead one to believe—how many years of service should one expect to get from a machine in a given class before trading it in?

Especially in the matter of selection, one might expect to find a number of companies whose practices could well serve as models. However, even among the large corporations, whose annual expenditures for office machines and appliances run into many thousands of dollars, there is apparently a surprising lack of any really scientific method. Take two or three specific cases. In one nationally known company typewriters were selected for the central transcribing department strictly on the basis of the wishes of each operator. When asked why this was done the office manager said that he thought they were about all alike anyway, so why not keep the girls happy and let them have what they wanted! Another company even larger than the first automatically trades in certain of its equipment at the end of two years, regardless of condition, severity of usage, cost of repairs during the period, etc. A third company recently changed the make of filing equipment it buys, at an increase in cost of approximately fifteen per cent, merely because the president of the equipment company told the president of the using company at lunch one day that he thought they ought to get the business. So far as the writer was able to learn, there was no reciprocity involved in this case, just friendship. The general sales-promotion manager of one of the largest office appliance and equipment manufacturers told the writer that from his observation he believes 95 per cent of the office equipment purchased is bought without adequate investigation and test. He cited on an illustration a corporation of international standing with numerous branch offices, one of whose officers decided that the office equipment problem was large enough to warrant the employment of a man to do nothing else but investigate and advise regarding its purchase. Such a man was employed and lasted less than a year, not because he proved incapable, but because his recommendations remained just that. Friendships, personal likes and dislikes, price, and other similar factors were given first consideration when it came to actual decisions on what to buy.

In the matters of selection and replacement, therefore, specific cases of companies which are doing an outstanding job are not numerous. Production capacity, operating speed, upkeep costs, and normal length of life are all factors which can be ascertained with considerable accuracy. Limitations as well as advantages should naturally be considered. Necessary changes, if any, to be made in the system of record control, forms to be used, etc., should

be given most careful thought. In other words look before you leap, get all the facts, don't take a parrot-like attitude in buying office equipment. These suggestions, which are after all just common sense, seem to be as near as we can come to laying down any scientific principles of selection and replacement.

The August, 1930, issue of *System* gives some thought-provoking facts about obsolescence and replacements in the office machine field. On the basis of a 20 per cent annual depreciation rate as the average used by companies covered in the survey, it was found that 50 per cent of the typewriters, 30 per cent of the dictating equipment, 29 per cent of the duplicating equipment, 55 per cent of the adding and calculating machines, 34 per cent of the folding machines, 40 per cent of the cash registers, 35 per cent of the addressing equipment, 51 per cent of the photographing equipment, and 31 per cent of the bookkeeping machines were obsolete. The article concludes with a statement which may well serve as a conclusion and summary of the basic thought behind this discussion.

Certain changes have taken place in the last five years which not only make our figures (referring to those just quoted) conservative but which, if generally adopted, would result in enormous savings in office management. Now is the time for office managers to adopt the same attitude as factory managers on the question of keeping up with the times.

CHAPTER III

OFFICE PERSONNEL

OFFICE EMPLOYMENT TESTS

By L. J. O'ROURKE, *Director of Personnel Research, U. S. Civil Service Commission*

Office duties may be divided into two general classes—those requiring proficiency in certain lines, such as stenography, typewriting, bookkeeping, etc., and those which do not require a specialized knowledge, but which require ability to learn readily and to adapt oneself to tasks which may require accuracy, speed, judgment, or so-called special aptitude.

The different types of tests used for such selection may be similarly classified as: (1) proficiency tests, such as typewriting, shorthand, or bookkeeping tests; and (2) capacity tests, including (a) general adaptability tests, and (b) special tests.

We can test proficiency in typewriting, in stenography, in bookkeeping, in comptometer operating, etc., with a high degree of validity¹ and reliability,² provided the tests used for any one of these types of work are properly constructed, made exactly comparable in difficulty, standardized, given under standardized conditions, and properly scored. Under these conditions, a given score on one series of a test may be reliably compared with any other given score made by any other person at any other time on any other series of the test.

Capacity Tests. Measurements for determining capacity—ability to learn and adapt oneself to new duties—are more difficult to devise and standardize. It is easier to determine the speed and accuracy at which a trained person can at present perform a standard task on a calculating machine, than it is to predict the speed and accuracy with which an untrained person would be able to learn to perform that task. It is therefore easier

¹ In this paper the term *validity* of a test shall be used to indicate the degree to which the test measures the ability it is designed to measure. If there is little relationship between the scores made by persons on a test designed to measure ability to do a certain task, and these persons' relative known ability to do this task, we say that the test has little validity. If the relationship between test scores and known ability is high, the test has high validity.

² The *reliability* of a test is the extent to which it consistently measures what it measures, i. e., the extent to which persons would be ranked in the same relative order by their scores on alternate forms of the test, quite apart from the relation of those scores to anything else.

to construct means of measuring, with a high degree of validity and reliability, an individual's proficiency, speed, and accuracy in stenography and type-writing, than it is to develop tests for predicting the extent to which persons will satisfactorily perform a variety of clerical tasks.

A further difficulty in the development of capacity tests for clerical work is the fact that it is difficult to measure output and to secure valid and reliable efficiency ratings by means of which the diagnostic value of the tests can be determined. When valid efficiency ratings are attainable, it is possible, after a careful analysis of the job, to construct capacity tests which indicate ability with a high degree of accuracy and reliability, as will be demonstrated later.

Research in selection embraces both the construction of devices for measuring the different abilities which are required for various positions, and the testing of these devices. A detailed study of the duties performed is necessary in connection with each of these selection problems.

The study of duties will include determination of the qualifications required for their performance. It is then necessary to determine what is the best method of evaluating and recording relative efficiency of employees in that particular work—whether by means of production records, by personal judgments of supervisors, or by some specially devised procedure.

The relative efficiency of employees must be determined in order to test the tests—that is, in order to determine whether those who make the high scores on the examinations developed are those who are most efficient in the performance of the work, and those who make low scores are relatively less proficient in the work.

The detailed study of duties necessary in constructing and evaluating an examination is also essential to the person engaged in developing training procedure for the position in question. Likewise, a study of these same fundamental factors is necessary in solving problems of promotion, of transfer, or of wage adjustment, and in understanding the relations between employees and management. If an analysis such as is necessary for any one of these purposes is undertaken without consideration of the other problems of management, the material developed can seldom be utilized in handling the other problems.

The duties of each type of position being studied should be so thoroughly analyzed, under actual working conditions, that the results will form a basis for reducing fatigue and conserving the energy of the worker, and for improving methods of training, transfer and promotion procedure, wage adjustment, organization of work, and coordination of activities, as well as for evaluating the tests and other data involved in research programs. The values derived will, in most cases, more than justify the research work, irrespective of test results.

Valid Tests of Capacity Illustrated. An example of valid tests of capacity are the tests which we have devised to select postal clerks. Analysis of the work of distribution of mail in the post office showed that the clerk must memorize some two to five thousand names of cities before he begins the work of distributing mail. In distributing, he must keep in mind that at certain hours of the day, mail which at other hours goes into compartment 3 of his

distribution case, now, because of different train connections, belongs in compartment 7. From time to time locations of postal stations change, as do mail routes. He must, therefore, be able to inhibit the tendency to place certain letters in compartments 3 or 7, and must recall that, to make different connections, these letters now go into compartment 8. Our mail clerk's problem, then, is to memorize these 5,000 names, to keep frequent readjustments and changes in mind, and yet to distribute very accurately and very rapidly.

Since the entire study is covered thoroughly in one of our annual reports,¹ I shall discuss here only the nature of the tests used to measure the capacities which analysis of the duties showed to be necessary, and to the criteria used to determine their validity.

Of the fifteen tests which we tried, the most effective one was a simple substitution test which requires the competitor to study for ten minutes a list of names, making mental associations between those names and key numbers, and thereafter to substitute the correct number for each name in the test list. As the competitor continues to make these substitutions, his task is simplified in direct relation to his ability to form the associations.

Comparison of differences in employees' test scores and differences in their efficiency ratings showed that this test, which we call the "sorting test," is excellent for predicting the applicant's output as a distributor in the post office. Applicants differ widely in the number of items which they answer in the time allotted, this number ranging from 20 to 350.

The test ranking next in selectivity was a "following instructions" test, which measures differences in the degree of accuracy with which competitors are able to follow directions in making changes in distribution schemes and in routing. That each of these tests measures qualifications essential for success in the job is demonstrated by a correlation² of 0.503 between efficiency ratings and scores on one of the tests, and by a correlation of 0.647 between efficiency ratings and scores on the other test.

The predictive value of this battery of special tests is indicated by a correlation with the criterion of 0.65 in the first trial, 0.67 in the second trial, and 0.69 in the third trial.

These special tests measure qualifications required for performing the duties of clerks in the post office much better than do the general tests. By general tests I refer to what is popularly known as the intelligence test. Scores on the test of general intelligence correlated with the criterion in the first study 0.44, in the second study, 0.37, and in the third study, 0.40. However, the addition of the general test to the battery of special tests increased the correlation from 0.69 to 0.715.

What does a correlation mean in terms of selection value in any specific case? Looking at this correlation chart (Fig. 1), which is only a sample and has no connection with the postal tests to which I have referred, we find

¹ Forty-second Annual Report of the U. S. Civil Service Commission.

² For practical purposes, think of the coefficient of correlation as the mathematical expression of the relationship found between any two variables, such as test scores and efficiency ratings.

that efficiency is represented horizontally—low efficiency at the left, high efficiency at the right. In studying the effect of dividing the group on the basis of various test scores, we find that, of the 18 persons scoring higher than 80 on the test, 17 are to the right of the center line. Seventeen persons who made this score proved to be better than average in efficiency, one lower than average in efficiency. The coefficient of correlation—0.61—by itself would not indicate this high and significant relation between high test scores and success on the job.¹

We also find that, of the 25 persons scoring between 60 and 80, 13 are above the average in efficiency. That is, there is a fifty-fifty chance of getting efficient employees from this group.²

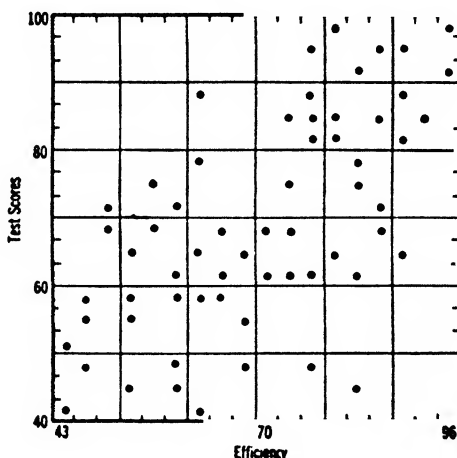


FIG. 1.—Test score showing low efficiency at left and high efficiency at right of chart.

Of the 18 persons scoring below 60, 2 are above average efficiency. For the applicants in this group, the odds are 8:1 against their proving of better than average efficiency.³

I have introduced this example to show that the coefficient of correlation should not be considered the sole indication of the value of a test. Its value is also determined by the point at which the passing mark is set. The distribution of cases on the scatter diagram must be given careful study.

What the statistics I have cited in connection with the postal tests mean in actual results is indicated by a careful follow-up study which showed that

¹ This does not mean that the exact 17:1 ratio would hold for another group even though one-third of the group were above 80 and the correlation were 61.

² A ratio close to fifty-fifty would be likely to maintain.

³ The statement in footnote 5 applies to this ratio.

93 per cent of the employees hired after the new examination was adopted were superior to the average of the employees selected by tests of geography, spelling, arithmetic, and letter writing. The significance of this superiority is more apparent when it is realized that vacancies in the large majority of the 300,000 post office positions are now being filled by the use of the practical tests which more directly and accurately measure essential qualifications.

Each of the three tests selected for actual use from a battery of fifteen meets the following specifications:

1. It measures qualities essential for success in the position.
2. It measures qualities not measured to the same extent by other tests in the examination; that is, it adds to the selective value of the examination as a whole.
3. It differentiates among different degrees of ability; that is, it distinguishes qualified applicants from those who are not qualified, and differentiates among the degrees of aptitude for the work. (a) It is focused at the correct difficulty; (b) it is of the correct range of difficulty.
4. It is reliable, that is, it is such that a competitor will make approximately the same grade on any alternative series.
5. It can be readily duplicated.
6. It is objective (a) in administration, (b) in scoring.
7. It is practicable (a) in its appeal to the applicant, (b) in time required and facility in administration, (c) in time required and facility in scoring, (d) in cost of printing.

The criterion¹ used in this study of tests for selecting postal clerks consisted of three factors:

1. The average number of pounds of first-class mail distributed by each employee during a period of six months, together with the amount of time, in minutes, spent on this distribution.
2. The records in a monthly case examination. This examination measures the rate and accuracy with which each worker can distribute into his distribution case.
3. Foremen's ratings based on a combined graphic and man-to-man rating scale.

The results attainable in the process of securing the desired measurement of efficiency are well illustrated by an example which A. C. Farrell, of the Dennison Manufacturing Company, cited in a paper before the American Management Association.² He said:

Our standard for transcribing from dictaphone cylinders is expressed in terms of a standard line of approximately six inches in length and averaging ten words per line. One hour time allowance for each 120 lines is the standard for this work.

The standard output per day of 8¾ hours, less 10 minutes for rest periods, is 1,030 lines. The average qualified operator will turn out between 1,400 and 1,600 lines per day, and an exceptional girl's production will run as high as 2,000 in a day.

¹ The criterion is our measure of the relative degrees of ability possessed by persons as indicated by their success on the job. Think of it as efficiency ratings.

² "Measuring Office Output," *Office Executives' Series*, No. 32, p. 10, 1928.

These first studies showed such a great possibility of saving that none of us who were in charge of that department could believe that it would be possible. We thought that no group of clerks could so increase their production. For one thing, according to the standards then established, but two of the book-keeping machine operators out of a group of eleven were attaining as high as 80 per cent. Please remember I said that 100 per cent, the standard, represents a minimum, not even an average rate of production. Today there is no operator in this department who is averaging less than 125 per cent and one girl has gone as high as 167 per cent for a full week's work.

The eleven operators have been reduced to seven, with the consequent release of expensive equipment.

The job analysis to which Mr. Farrell refers was undertaken as a basis for establishing standards and rates of work. It differs in objectives, rather than in methods or results, from analyses which are made as a basis for standardizing selection methods.

Such a study as reported by Mr. Farrell offers a basis for securing a valid and reliable criterion. Let me repeat that if no study has been made for establishing standards and rates of work, a study designed to secure a criterion affords an excellent opportunity for making such a contribution, quite apart from the success or failure of the test program. This is why work studied should be undertaken with the broader objective in mind, and not merely for the purpose of testing a test.

The extent to which an analysis of the latter type may result in relieving unnecessary expenditure of energy, yet may, at the same time, increase production and lead to better relations between management and employees is demonstrated by a study of the work of postal clerks.

Attention was called to the need of a new type of examination for selecting men for one type of mail distribution in one of the large post offices. The new examination was thought necessary because of the difficulty of securing efficient men for this work. In order to measure the abilities required for this particular type of work, not general throughout the post office, it would have been necessary to devise special aptitude tests and motor coordination tests requiring complicated equipment. Had effort been devoted immediately to the development of such tests, the particular problem assigned—that of devising a means for selecting efficient men for this work—might have been solved. On the other hand, great expense for equipment and for test construction and administration would have been involved, and the working conditions would have continued to demand men able to withstand excessive strain.

When a study of the type of distribution work described was undertaken, it was found that the task which required considerable skill and two or three months of training, and which involved excessive strain, could be changed to a much simpler task requiring no particular skill or endurance. This change was recommended, and the construction of expensive equipment and special aptitude tests was made unnecessary.

Naturally this change greatly simplified the problem of devising selection tests. The results of the study, however, were of far greater importance in simplifying the problems of management. Turnover has been reduced,

output increased, and morale improved as a result of the analysis which should precede a test program.

Differences in Correlation between Test Scores and Criterion. What are some of the reasons for conflicting reports as to relationships between test scores and criterion, as evidenced by great differences in correlations reported? This is answered in part by first answering the question: How are we to decide what factors to include in our criterion, and how to weight them? A criterion should consist of the factors contributing most to the employer's satisfaction or dissatisfaction with the way in which the duties of the position are performed. In studying any given position with a view to securing valid ratings of the efficiency of the persons employed in the work in question, we should, as one of the initial steps, ascertain the reasons for employees' succeeding or failing or becoming problem cases. Incidentally, the basis of complaints or of difficulties encountered with employees should be ascertained. Such a study will form the basis for deciding which factors are to be included in the criterion, and the importance to attach to each factor. At the same time, it affords a clearer understanding of the factors that tend to improve or to weaken morale.

To illustrate, let us consider two groups of stenographers. Those in Group 1 take dictation in shorthand, and transcribe the notes exactly as given, the subject matter consisting of non-technical letters and reports. The stenographers in Group 2 take shorthand notes, and compose letters and reports from notes; they meet callers, handle inquiries, make appointments, and perform other secretarial duties. Let us list the factors that might determine the efficiency ratings of the two groups of stenographers.

a. Stenographic speed, stenographic accuracy in taking and transcribing dictation.

b. Typing speed, typing accuracy.

c. Ability to write intelligent and correct letters from notes—this ability involves judgment and knowledge of spelling and grammar. Suppose we call it general stenographic requirements as distinguished from stenographic proficiency.

d. Cooperation, industry, effort, initiative, ability to accept criticism, ability to meet people—that is, to make people feel that they are receiving courteous treatment and consideration—and tact in so handling difficult cases that resentment is relieved rather than created.

Let us consider the importance, in terms of success and failure, of the factors listed. We find that for Group 1, the group doing principally stenography and typing, speed and accuracy in taking dictation are definite factors in their being rated as satisfactory or unsatisfactory. For Group 2, while stenographic speed and accuracy are obviously essential, few of the group are rated unsatisfactory or are discharged on this score. It is not, therefore, a serious problem for Group 2.

Next, we consider ability to write letters from notes. The stenographers in Group 1 are not required to compose letters and reports or to exercise a high degree of judgment in their work. Consequently, few are discharged or rated low because of lack of ability to compose letters. It is not a problem in their case. On the contrary, we find that many in Group 2 fail because of

lack of this general ability, and hence it is a very important element in their efficiency rating.

For Group 2, all the personality factors are important. For Group 1, none of them are essential, with the exception of industry and effort, and the stenographers of this group are closely supervised with regard to this point. These stenographers have little occasion for initiative; they do not meet the public. The members of Group 2, however, to a great extent, work on their own initiative, their effort is largely unsupervised, and they are required constantly to meet new people. A few marked cases of inability to cooperate, inability to accept criticism, lack of initiative and effort are noted, and people are discharged on these scores. These are usually, however, very pronounced cases, and as such they leave a very definite impression upon employers. Their importance, therefore, is likely to be exaggerated. As a matter of fact, a check of the efficiency records shows that, though separations on these scores are more likely to be remembered, the personality factors are less a problem, even for Group 2, than are the other factors.

As a result of our analysis, let us consider the following weights which management might reasonably assign to the four main classifications of the efficiency ratings of stenographers.

For Group 1, we could give stenographic speed and accuracy a weight of 45 out of 100 points; typing speed and accuracy, 35 points; general stenographic requirements, *i.e.*, judgment, the ability to spell and use English, 15 points; and personality factors, 5 points.

In contrast, for Group 2 we could give stenographic speed and accuracy a weight of 30 points; typing speed and accuracy 20 points; ability to write intelligent and correct letters, 35 points; and personality factors, 15 points.

Obviously, the correlation between the efficiency ratings weighted for Group 1, and scores made by Group 1 on a battery of stenographic, typing, spelling, grammar, letter writing, and judgment tests, would be quite different from the correlation between the efficiency rating weighted for Group 2, and scores made by Group 2 on the same tests. The judgment test may be expected to have a low correlation with the criterion for Group 1, where judgment factors are given a weight of only 15 per cent in the criterion, but a higher correlation would be expected with the criterion for Group 2, where these factors are given a greater weight than any other factors.

This brief analysis shows why we can not talk in terms of relative value of tests for a position, merely by naming the position, without considering the nature of the duties, and the relative importance of the efficiency factors as weighted by employers.

One of the reasons, then, for the conflicting reports as to relationship between test scores and efficiency is that the criteria—usually efficiency ratings—used in different studies, are based upon different factors. The significance of test scores naturally differs when these scores are compared with different factors. Sometimes the criterion refers to routine work; at other times it refers to work requiring more judgment. Sometimes, in rating efficiency, accuracy is given a much greater weight than is speed; sometimes the reverse is true. Sometimes the criterion is based upon actual production records, and such factors as interest, effort, personality, etc.,

have no part in it. In such cases, a higher relation should naturally be found between efficiency and scores on carefully constructed tests than when personality, temperament, and other general factors, which the test does not measure, enter into the total efficiency rating. In other words, the factors reported as office efficiency, by various personnel men, differ almost as widely as do the relationships which are reported between test scores and office efficiency.

Suppose we are evaluating a battery of general tests for selection of clerks. Let us suppose that on certain groups of clerks we have reliable and valid efficiency ratings based on the following factors: effort, cooperation, speed, accuracy, judgment, absence, and tardiness. Let us assume, also, that analysis has shown that these are the factors which should constitute the criterion for this type of clerical work. Let us next consider that we have found the correlation between the scores on the battery of four tests, properly weighted, and the total criterion, and that the correlation is 0.48.

Next, we should find the relation between the total scores and that part of the criterion which has to do with speed, accuracy, and judgment, which most definitely relate to output and ability; let us suppose that the correlation between the four tests, properly weighted, and this part of the criterion is 0.64.

It is important for us to know that the tests predict success and failure as a whole, when the entire criterion is used, to the extent indicated by a 0.48 coefficient of correlation. We should not, however, be misled by this coefficient. It is even more important for us to realize that the tests are designed to measure and predict speed, accuracy, and judgment, and that they do predict this to the extent indicated by a 0.64 coefficient of correlation. Moreover, it may be possible by the use of reliable personal history records, application blanks, references, etc., to increase our ability to predict effort, cooperation, absence, and tardiness, and thus increase the value of the total prediction for each of the divisions of our criterion.

Importance of Criterion in Choice or Construction of Tests. The criterion should be considered not only as a means of measuring the effectiveness of tests, but also as a means of determining what tests to make or to use. If analysis of the position shows clearly that speed, or accuracy, or memory, or ability to compose an effective letter, or ability to adapt readily to new situations is essential to success on the job, then not only should that quality be weighted in the criterion, but tests should be devised or selected to measure it, and such tests should form the basis of the battery of tests used in the research program.

Stenographers differ more in judgment, knowledge of spelling, and ability to use English, than any of us would believe. I was requested recently by one of the managers of a large organization to test stenographers and typists in that organization. The general complaint was that a great many of them were unable to "use their heads." They had been selected previously on the basis of a written test in stenography and typing. The test also included some spelling items and a letter which was evaluated in the more or less subjective way in which letters are generally evaluated. There was no general intelligence test, so called, used in their selection.

I gave to this group our new classification test for stenographers and typists. This test is made up largely of judgment items; it contains, in addition, 20 non-dictated spelling items and 20 multiple-choice grammar items. The scores of the stenographers and typists ranged from 16 to 85. The scores were scattered about equally along the scale, some two or three points apart. For example, the lowest score was 16:

1 had a score of 20	3 had scores between 56 to 59
1 had a score of 24	5 had scores between 60 to 63
2 had scores between 28 to 31	2 had scores between 64 to 67
2 had scores between 32 to 35	4 had scores between 68 to 71
5 had scores between 40 to 43	4 had scores between 72 to 75
4 had scores between 44 to 47	2 had scores between 76 to 79
6 had scores between 48 to 51	6 had scores between 80 to 83
2 had scores between 52 to 55	1 had a score of 85

The significance of this scattering of scores from very low to high becomes apparent when the same decided trend is found to exist in the efficiency ratings of these employees. Those who made the lowest scores proved to be those with lowest efficiency ratings; those with scores about the average of the group were those whose efficiency ratings are about average; and those whose scores were highest were those who have the highest efficiency ratings. The coefficient of correlation between scores and efficiency ratings was 0.73. Of the 25 per cent who made the highest scores, approximately 90 per cent were above the average efficiency of the group.

To be sure, personality factors contributed to the complaints regarding these employees, but the major reason for dissatisfaction, as determined by a comparison of test scores and efficiency ratings, was lack of judgment, lack of ability to use English, and, to a lesser degree, faulty spelling. Many cases of supposed lack of interest, effort, and initiative, were in reality, as evidenced by the low scores, lack of ability.

I do not mean to minimize the importance of effort, interest, initiative, and so forth, as important factors in determining success and failure. I realize the importance of these factors. I realize, also, the difficulty of predicting or evaluating them. My point is that there are important qualifications that we *can* measure. Measuring these will often help us to judge such factors as effort, interest, and so forth. It is only practical, then, to concentrate effort on measuring, by means of objective tests, the measurable factors. Certainly we have as much reason to expect cooperation and initiative from those with superior abilities as from those with less ability.

The main reasons why conflicting reports are so often given in regard to the relation between efficiency and test scores and other data are as follows:

1. Those evaluating tests include different factors in their efficiency ratings for the same class of positions. Therefore the correlation between test scores and these different efficiency ratings might well be expected to be different.

2. Different factors in efficiency ratings are often given different weights by different raters. The relation between test scores and efficiency ratings will vary according to the weights assigned to the factors making up the efficiency rating.

3. Examiners often use tests which are generally labelled similarly such as "clerical tests," but which, in reality, are quite different, owing to the differences in the range of the test or in the difficulty at which the test is focused.

4. The lower the validity of the efficiency ratings, the lower the correlation with test scores, other things being equal. That is to say, if the criterion has no validity whatsoever, we should expect a zero correlation with test scores, regardless of whether or not the test does measure or predict ability for the position in question.

5. Some persons include in their efficiency ratings factors which the test does not attempt to measure, such as length of service, tardiness, personality, etc. Others include only ability factors which the test is designed to measure, such as speed, accuracy, and so on. Obviously, the second group would find a higher correlation with efficiency ratings than would the first group. Some persons construct tests to measure factors that analyses of duties have shown to be important, while others simply go ahead blindly, hoping that with some of the tests they will find a relation with efficiency ratings.

6. The range of ability of the group tested influences the correlation. The wider the range of ability, the better the correlation. For example, suppose you were asked to observe the work of 20 clerks, whose actual output, as evidenced by production records, ranged from 16 to 85, with a fairly even distribution throughout that range, and to rank the 20 clerks, on the basis of your observations, as nearly as possible in the order of their relative production. It is quite probable that the relation between your judgment and the actual production of the 20 clerks would be high. Suppose, however, you were asked to observe and rank in order of efficiency another group of 20 clerks whose actual ability, as indicated by production records, ranged only from 75 to 78. This would be a more difficult task; your judgment as to their relative ability would show a much lower relation to the facts.

Thus it will be seen that the problem of differentiating among people whose ability is very much the same is much more difficult than that of differentiating among people who differ greatly in ability. We find a much lower correlation when we have a restricted range of ability, and a much higher correlation when we have a wider range of ability. It is, of course, possible, by means of a special statistical formula, to predict, with a high degree of validity, what the correlation would be if the range were greater or less.

7. Some persons determine the weights to be assigned to the various parts of the examination by means of multiple correlations. Others merely weight the tests by guess. Obviously, the correlation between tests and criterion in the second case will be lower than in the first case.

Relation between Speed and Accuracy. We are constantly hampered in the securing of a valid criterion by the fallacious belief in the "slow but sure" worker. Slow workers are rated high merely because of the prevailing idea that they make few errors, and that persons who work more rapidly are less accurate than those who are more deliberate.

What is the actual relation between speed and accuracy in office workers? Let me answer this question with reference to a study which we made of general clerical tests. After a revised general clerical examination had been accepted and used, a study was made of the performance of 500 competitors on a twenty-minute clerical test.

Figure 2 shows the accuracy of the 125 most rapid workers as compared with that of the 125 slowest workers. The percentage of accuracy of each

individual was based on the relation between the number of items correct and the number of items tried. Although some slow individuals are accurate and some rapid individuals are inaccurate, the work of the 125 most rapid com-

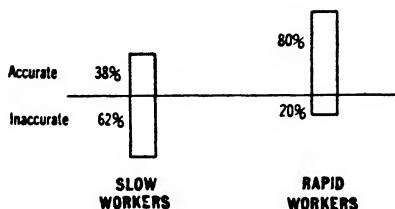


FIG. 2.—Comparison of accuracy of 125 most rapid workers with 125 slowest workers.

petitors was 80 per cent accurate as compared with 38 per cent accuracy of the 125 slowest workers.

Figure 3 shows the relative number of items correct, or the production of the rapid workers, as compared with the production of the slow workers. The

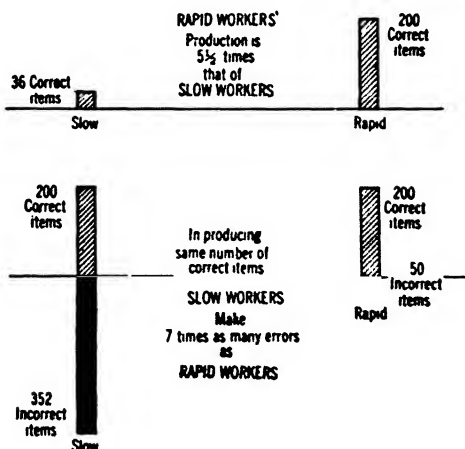


FIG. 3.—Comparison of the production of rapid workers with slow workers.

number of items answered correctly by the 125 rapid workers was five and one-half times that of the 125 slow workers, or in the relation of 200 to 36.

Figure 3 also shows the relative number of items answered incorrectly by slow and rapid workers as well as the relative amounts of time required by

the two groups. In accordance with the rates of speed at which they worked, the slow group would have taken 110 minutes to answer 200 items correctly, as compared with 20 minutes required by the rapid workers. In order to answer these 200 items correctly, the slow group would have answered 352 items incorrectly, as compared with 50 incorrect answers by the rapid group. If it were justifiable to speak of answers as production, this would mean that a given task would require five and one-half times as many slow as fast workers, and the spoilage of the slow workers would be seven times as great as that of the fast ones.

These findings are based on the relative value of speed and accuracy for general clerical positions. No generalization is warranted which would attempt to assign this same relation between speed and accuracy as a basis for the selection of applicants for positions requiring different qualifications.

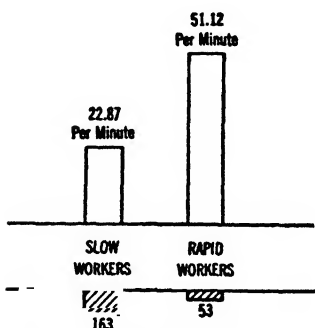


FIG. 4.—Relation between speed and accuracy of employees on monthly case examination.

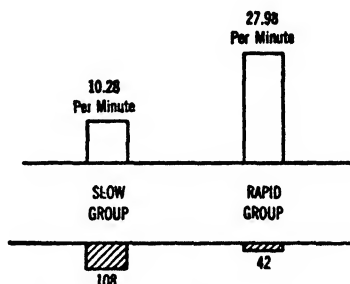


FIG. 5.—Relation between speed and accuracy of competitors on sorting test.

Similar results were secured in the study of speed and accuracy of Post Office employees. Postal employees are given a sorting test each month as a basis for the Post Office Department's efficiency ratings. This test is designed to resemble the work of sorting as closely as possible and is a very close measure of the relative efficiency of postal clerks. In this test a large number of cards, each bearing an address, either handwritten or typed, are distributed into the departments of a sorting case, according to the same sorting scheme used by the clerk in his daily work. The time required to sort the cards and the number of errors made determine the clerk's efficiency rating.

A comparison was made, both as to speed and as to accuracy, between slow and rapid postal clerks who used the same sorting scheme. The slow group sorted an average of 22.87 cards per minute, as compared to an average of 51.12 per person per minute for the rapid group (see Fig. 4). The rapid group was therefore two and one-fourth times as fast as the slow group.

The total number of errors made by the slow group on this test was 163, as compared to 53 for the rapid group, or three and one-eighth times as many errors for the slow workers as for the rapid workers.

The rapid workers are therefore two and one-fourth times as fast, and make fewer than one-third as many errors as the slow workers (shown by Fig. 4).

We found that the Civil Service sorting test makes a similar distinction among competitors (see Fig. 5). The slow group of competitors completed an average of 10.28 items per minute, while the rapid group completed an average of 27.98 per minute. The rapid group of competitors was therefore two and three-fourths times as fast as the slow group. This is a slightly higher ratio than that given above for slow and rapid employees on the monthly card-sorting test.

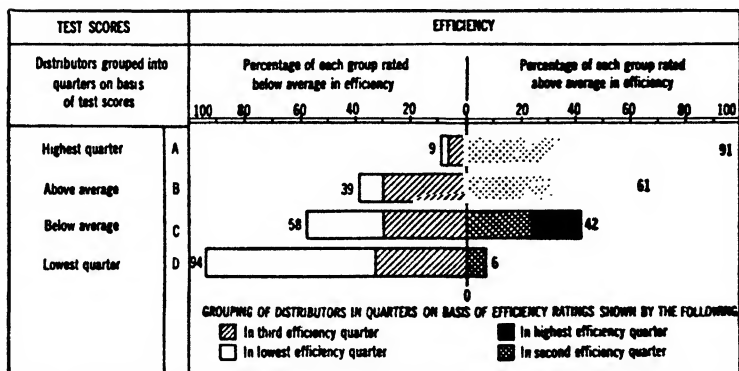


FIG. 6.—Extent of differentiation in examination scores.

The total number of errors on the sorting test given to competitors was 108 for the slow workers, as compared with 42 errors for the rapid workers, a ratio of two and one-half to one.

Another frequently recurring question having to do with the factors of speed and accuracy is this: *What is the relation between speed and accuracy scores on tests, and actual performance on the jobs?* This question, too, can be answered with a report of one of our studies—the post office study which has already been mentioned. In a final study made in order to verify the value of the new post office examination, the tests, with samples, exactly as printed for actual use, were given to a group of 124 employees of the mail department in the Chicago Post Office, for whom accurate efficiency records were available.

The extent to which the examination scores differentiate among the employees is shown in Fig. 6.

The vertical line *OO* is the dividing line on either side of which 50 per cent of the efficiency ratings of the whole group fall. It will be referred to as the average. Each horizontal bar represents one quarter of the group tested. The top bar represents the distributors who made the highest 25 per cent of the test scores, hereafter referred to as group *A*. The lowest bar represents those who made the lowest 25 per cent of the test scores, or group *D*. In each bar, the part at the right of the vertical line indicates the percentage of that group rated above average in efficiency; the part at the left shows the percentage of the group rated below average. The highest 25 per cent in efficiency of the total number of distributors is represented by the solid white, and the lowest 25 per cent of the total number by the solid black part.

This chart shows that of 100 competitors equal in test scores to those of Group *D*, the lowest group, 94 per cent would be expected to be below the average in efficiency of the distributors tested, nearly all of bar *D* on the chart falling to the left of the line *OO*. A low test score is actually indicative of lack of aptitude for the work.

Not more than 25 per cent of the applicants are likely to receive appointments, and we are therefore concerned chiefly with the top bar. This bar shows that those who make the highest test scores are the distributors who

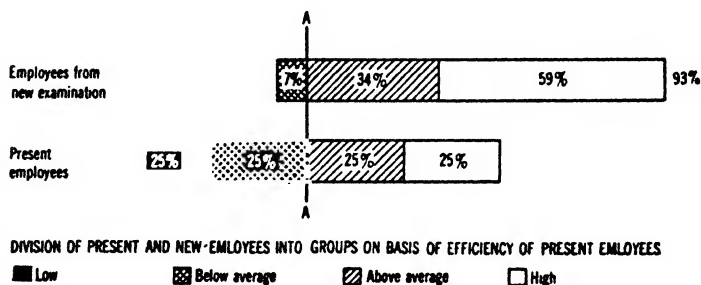


FIG. 7.—Second study of group scored in Fig. 6.

are highest in efficiency. The chances are 91 to 9, or 10 to 1, that their efficiency will be above the average of the distributors who were tested. In other words, it may be seen from the chart that, if 100 competitors made scores equal to those made by Group *A*, 91 will be likely to be more efficient than the average of the distributors who were tested; and 55 of these 91, represented by the solid white part of the top bar, may be expected to be as efficient as the 25 per cent most rapid and accurate of the distributors on whom the tests have been tried. Thus it may be expected that 91 per cent of all the appointees who will be selected through the new examination will be more efficient than the average of the present employees.

These findings were verified in a second study in which 93 per cent of the upper quartile in test scores were above average in efficiency, and none of the lower quartile were above average in efficiency (see Fig. 7).

TRAINING CLERICAL WORKERS ON THE JOB

By W. H. LEFFINGWELL, *President, W. H. Leffingwell, Inc.*

What Is Training? Since training in clerical work is a subject few of us know very much about, and most of us use the term "training" rather loosely, a definition is in order. Education is a term that is constantly confused with training, though there is a decided difference between these two activities. Education signifies the systematic development of the mind and other natural powers, and its aim is to give us a harmonious development of all our faculties. Training, on the other hand, is a much more limited term and may be defined as the development of habits. In the sense in which I shall use the word here, it means the development of work habits in general, and in this case, clerical work habits in particular.

Now in this sense, training is far from being universal in offices. Executives usually do not consider that there is any need of, or any advantage in, the development of specific work habits. Of course everyone recognizes the difference between the trained and the untrained office worker, but there are few executives indeed who can recognize the poorly or partially trained worker, or who are, in fact, interested in anything other than the final result. If that is satisfactory in their estimation, the means by which it is brought about, or the cost of obtaining it, seem to be matters of slight importance to them.

Breaking in the New Clerk. What passes for "training" in the usual office is somewhat as follows: The clerk is brought into a new and strange environment, seated at a desk, and given a batch of work by a person who is a complete stranger to her. Naturally her confusion is great. The supervisor talks to her, tells her about the work, sometimes for as much as an hour. She is miserably self-conscious, imagines that everyone in the office is looking at her and, as a result, hears perhaps about half what the supervisor says. She is then left alone with the work. She tries to remember some of the things she has been told, but with little success, and after mentally floundering around for a time, finally sums up courage to begin. Naturally she makes mistakes—many of them. Her first mistakes are overlooked, but after that they are noticed, and she is disciplined and perhaps threatened with discharge, which threats merely serve to confuse her all the more. However, unless she makes too many errors, the threat is not carried out, and after she has made the usual quota of mistakes that all beginners—under such conditions—must make, a sufficient number of times, and has been duly "called down" in consequence, she is then alluded to as a "trained clerk," a most grotesque application of the term.

Two Methods of Training. In the few offices where attention is given to the subject of training, there are two general methods in use: the vestibule school and training on the job. The former is supposed to give essential training to the new employee, before he—or she—enters upon the actual work of the office. Such training, as a rule, is short, though in some large companies it is repeated at frequent intervals with employees who are being trained for higher work. But this method is applicable only in the very

largest offices, as, unless there is a heavy labor turnover, the number of new employees would be too small to warrant the expense of a training school. And on the other hand, if the turnover continued great in such a company, it would be a very strong indication that the training was inadequate.

Inadequate Training in the Vestibule School. There are indeed two very obvious reasons why the training given in a vestibule school must ordinarily be inadequate. Such a school cannot train clerks for the hundreds of positions to be found in the office, for the reason that teachers, expert in them all, cannot be obtained, the fundamental units not being sufficiently known or classified to be taught as units. Secondly, the time available for instruction in a large number of things is too short, and to lengthen it would not be advisable. As a consequence many of the so-called vestibule schools give but a short course in the rules and policies of the company, and the most meager training in work habits for a few elementary jobs. From then onward, little organized, conscious training is given the worker, though in a few notable exceptions this is not strictly true. There is also a tendency for supervisors of offices which have classroom instruction, to consider that they are thereby relieved from all further training.

Training on the Job. But without question the most effective place to do the training is actually on the job. This method has the great advantage of dealing with realities. The worker at once realizes that he is taking part in the actual work of the company; he sees other workers around him engaged in the same sort of task, his spirit of emulation is aroused, and he is confident that he also possesses the ability to master it. Training on the job is also intensive, and therefore more quickly effective. Work habits can take form directly, and the worker himself can perceive without difficulty their necessity and value.

This method of training can also be continued indefinitely without undue expense, and consequently those who are slow to learn, though really good workers otherwise, are not lost to industry.

An objection commonly raised against training on the job is that a large staff of special teachers is required and that the expense of this is prohibitive. This is simply not true, for out of every group of skilled workers it is usually possible to select one who has the ability to impart his knowledge to others. Therefore it is not necessary to add to the teaching force at all, for the actual workers can be used as teachers, subject to the oversight of the supervisor.

Reasons for Neglect of This Method. In short, training on the job is so undeniably successful and so universally applicable, that one wonders why it is not more prevalent. There are, however, several reasons for this neglect.

1. Training of work habits presupposes standard methods and work habits, but in the large majority of offices there are practically no standardized methods, and where these are non-existent, it naturally follows that there is nothing to teach, and therefore no reason why training should be stressed. Then again, to standardize requires much extensive labor; in fact a huge task that may take years to accomplish completely. For this reason, personnel men have been content to make the so-called job analysis. This, in actual practice, is not what we engineers call an analysis of the job or a scientific study of it for the purpose of improving the operation by the elimination waste but is merely a catalogue of the thing at present being done.

2. Among the executives of this country there seems to be a general assumption that correct habits of work will form naturally with the requisite amount of experience, an assumption that is entirely baseless. It is true that work habits are formed in every case, but they are not alike with different workers, and they are rarely good work habits. One does not learn naturally, for instance, how to lay bricks correctly. A long apprenticeship is necessary, and even then, in this 6,000-year-old craft, the late Frank Gilbreth found, by scientific study of the operation, that of the eighteen movements customarily used by skilled bricklayers, no less than thirteen were wasted and valueless. By the new method he evolved, the output was increased from 125 to 350 bricks an hour, and that, too, with a reduction in the resultant fatigue.¹

3. There is also a general assumption on the part of most office managers that office work is simple, does not require training, and that work habits are matters of no particular importance. But the fact remains that there is no task so simple that the method of performing it cannot be improved by proper study. As I shall show later on, few clerks know the right way to affix a postage stamp on an envelope—apparently a very simple matter.

The difference in results between the average methods of working and the best methods, are, however, so startling that it seems difficult to believe that not all office managers are striving to attain the best. When it can be plainly demonstrated that a trained worker can easily produce twice as much output as the average worker without such training, one would think that every office would establish organized training, but perhaps not one in a hundred has as yet made the barest beginning of such scientific training.

It can be maintained without fear of denial that even experienced clerks do not naturally adopt the best methods; neither do clerks "pick up" best methods by observation. I have seen untrained clerks seated among highly trained operators, yet making no attempt whatsoever to imitate their better methods.

Six Steps in Training Clerks. The problem of training clerks involves considerable study, and is composed of six important steps.

1. The actual work to be done must be explained to the worker in a manner that will thoroughly impress him with (a) the purpose of the work; (b) the relation of the operation to other work; (c) the relative importance of the various details of the job; and (d) the manner in which it is to be done. This is the beginning of all training, and there are perhaps more companies who take this step than will be found taking the rest of them. But it is only the beginning, and nothing remarkable can be accomplished by stopping there.

2. The best arrangement of the work and the work place should be taught. If every job is carefully studied, it will be found that there is always one particular way of arranging the work and the work place, that is far superior to others. But this is a matter which can only be determined by deliberate study; one cannot "just naturally" pick it up, and if left to his own devices the clerk will usually adopt a clumsy arrangement. Many managers, though observing this, hesitate to suggest a change, on the assumption that a person will work better with his own arrangement than with any other, which is of course an unfounded idea.

¹ GILBRETH, FRANK B. "Applied Motion Study," p 42, Sturgis & Walton Co., New York, 1917.

3. The best motions constitute the next step, and they can only be found by the most careful analysis of the work to be accomplished, the nature of the motion required, the element of fatigue, and so forth. Occasionally a worker will, of his own accord, develop a superior way of performing a certain motion, but rarely indeed does one worker develop all of the best motions in an operation. A study of the various methods used at present by different workers will be found suggestive, but ordinarily the observer will be compelled to use his own ingenuity.

4. The next step to be taught is the correct sequence of the motions at a standard rate of speed. Gilbreth has shown that fast motions are different from slow ones, and if one is definitely to learn the right motions, he must at the same time learn to perform them at a standard rate of speed.

5. While the fourth step is being learned, the habit of speed must be developed. For it is strictly a habit. Some people acquire it more readily than others, but all must learn it.

6. Accuracy must also accompany the last two steps, but its final development may be completed after the habit of performing the right motions in the right sequence, and at a standard rate of speed, has been acquired. The worker must be taught the points at which accuracy is of the greatest importance, and also where extreme accuracy is not required. The meticulous clerk is often more of a liability than an asset.

That there are great possibilities in the development of standard methods in office work, may be realized when it is known that even in the simplest operations there is a right, as well as a wrong way, and that the difference between the two may be startlingly realized in the difference of output under each method. Thus, the clerk without training, will rarely be able to affix stamps on envelopes at the rate of more than 1,000 an hour, which works out at about 16 a minute. The standard rate of speed with the standard method is 84 a minute or 5,040 an hour. If one were simultaneously to observe two workers with these different methods, the slower one would appear to be doing the greater amount of work. A look at the output would, however, show at once that this was an illusion.

Trained and Untrained Workers. A trained clerk making entries on cards will easily make two or three entries, to each one that an untrained worker makes.

An untrained file clerk will find difficulty in filing 100 letters a day, while a trained one—on certain kinds of material—will file 100 an hour.

In the operation of any machine such as a typewriter, card punching or calculating machine, the importance of training is easily recognized and an attempt is made to employ persons only who have had such training, but since the organization knows nothing of the possibilities, it is compelled to accept the word of the clerk that he is trained. The commercial schools turn out a typist who is able to write from 30 to 50 words a minute—50 to 60 words is considered excellent—yet the typewriter companies take specially selected typists and develop many of them to a speed of 100 words a minute. Now contrast these figures with the average speed of the operators in a large majority of offices—15 words a minute!

Such training as I have been describing can never be approached in a vestibule school, which, with a limited number of teachers, must attempt to cover the wide variety of operations to be found in any office. Training

such as I have described, must be organized, and the organization must be as wide as the office itself.

The size of the office will determine who shall do the training work. In the small office, the supervisor himself will be the trainer; in the office somewhat larger, the departmental supervisor may handle the work, and in some large departments, or on some special operations, the trainer may be one of the working clerks, who is a regular clerk at all times when there are no new clerks to be trained.

Elements in Training for a Simple Operation. Elsewhere I have outlined the training for a simple operation, such as typing envelopes, a description which will bear repeating here:

"Let us suppose for example, that the job to be learned is the simple one of addressing envelopes on the typewriter. What are the elements of this work?

1. There is the placing of the copy in the most advantageous position. If a copyholder is provided, the instructor's duty is to see that it is used in the standard way, the one best way found by a scientific analysis. There is, as a rule, a tendency on the part of clerks—common also to all other workers—to depart from the best ways, and this tendency must be overcome by constant watching.

2. The layout of the work is of equal importance. 'Any old way' is not permissible. The one best way *must* be used, for unless it is, the best results will not be obtained. The instructor will not merely repeatedly tell the worker how to do it, but will demonstrate it manually again and over again, and keep constant watch until the method has become habitual and fixed.

3. The correct motions for putting an envelope in the machine, for reading and writing copy, for taking the envelope out of the machine and laying it aside constitute a cycle of operations which must be performed in the standard way each time, if the best results are to be obtained, and it must not be assumed that the worker can and will do this of his own accord. The habit must be formed.

4. Learning to read the copy the best way is important. If this is left to a random choice of method, it will be found that some clerks will write much less rapidly than others, and this will not be due to lack of finger speed but to slowness of mental reaction. The novice will usually look at the copy to read the initials, then type them, next look at the name and type that, then the street address, and finally the town and state. This may be detected by observing the manner in which the typing is done and listening to the tapping of the keys. The correct way is to read the whole in advance of the writing, and to type steadily until the entire name and address is written. This method—because of the shortness of the time required to read and commit the name and address to memory—enables the operator using it to write nearly twice as many envelopes with the same typing speed as the person using the incorrect methods.

In the process of thus visualizing the entire name and address, a decision is actually made, and the making of such decisions is, by the way, a most important element in the speed of all operations performed in the office. It is evident that in all occupations where the unit operation is small, such as the addressing of envelopes, filing of letters or cards, making entries of various sorts, and so on, every action nevertheless requires coordination of body and brain, the latter deciding, the former acting in agreement with the decision. Office operations as a rule, first require reading, second, deciding the course

to be taken, and third, taking that course, the second element not being entirely dependent upon experience, though that usually enters in large part into the process. It is also dependent upon the quick reaction of the mind, and the attainment of this quality is largely a matter of habit that has become fixed. The habit of speed in mental reaction, or what I call speed in making a decision, can be cultivated in most persons, though not in all. If the work of the slow-moving clerk is analyzed, it will be found that the chief reason of the slowness lies in this element of decision—it requires an appreciable time for him to decide to make the motion. Some clerks will hesitate before each motion, while others will move rapidly, though quietly, and seem to be exerting no great apparent effort. In typing, this has been alluded to as rhythm—in which lies the secret of speed—but it has as yet not been defined in other clerical work. Watch a slow file clerk sorting letters alphabetically; she picks up the letter, looks at it absently, then realizes that she is not supposed to read it but to find the name—which she then does; next she turns her glance on the guides in the sorter, looks at them absently, slowly finds the correct one, glances hesitantly at the letter again and puts it in its proper place. The rapid sorter picks up the letter, glances quickly, but with certitude, at the place where the name should be, finds it and at the same moment identifies the proper guide, and without the slightest hesitation puts the letter in its place. The actual motions of both will appear to be essentially the same, but one will require twice the length of time the other does, this being due altogether to the series of hesitations running through the operation.

5. The habit of speed must be developed. While the element of decision is the greatest factor in the development of speed, in addition there is the habit of making quick motions. Assuming that the worker has learned the correct ones and their proper sequence, the next requirement is the development of speed in making them. This being entirely a matter of habit, can only be taught by repeated practice and continual urging on the part of the coach.

This is the sort of instruction—on the actual method of performing the work—that is usually absent in office work, but which has been highly developed by some companies, and with marvelous results.

This job instruction need not be carried on indefinitely, for there should be a definite goal. Usually this is fixed as two-thirds of the standard rate of production, and when this rate is attained, the intensive instruction may cease, though it is good practice to continue general supervision—an occasional checking up of the work—still further. The full standard will ultimately be attained, the habit of making it become fixed, and the checking up diminished to some extent, though general supervision of course must not be entirely abandoned.

The difference between the average worker in any occupation, and the expert, is almost entirely a matter of training, yet the difference in their output is enormous, but despite this fact there are many offices which do not have any definite, organized system of training, and plead in extenuation, that it costs too much. The large and successful companies, however, do not look upon the matter in this light, and this is probably one of the many reasons why they are large and successful."¹

Importance of Standards. It cannot and must not be assumed that one can begin training offhand in an office where there has been no preliminary

¹ILL, W. H., "Office Management; Principles and Practice," p. 719 *et seq.*, McGraw-Hill Book Company, Inc., New York, 1925.

study and analysis of methods, for in the absence of this, the training work would, at most, crystallize and perpetuate the conditions then existing, or in other words, it would accomplish nothing in the way of betterment. As Henry L. Gantt once said, "The usual methods are usually wrong," but great economies can be accomplished by the office manager who first makes the wrong methods right. When this is done, training of the type I have here been describing, will not only make still greater economies, but will also improve the service and greatly reduce the burden of the office supervisor.

PREPARATION AND USE OF ORGANIZATION CHARTS AND MANUALS OF PROCEDURE

BY ELSIE LOUISE BAECHTOLD, *Editor of Manuals, Irving Trust Company*

Banking Is Similar to Other Business. Although bankers sometimes say "Our business is different," banking is not essentially different from other business. Banks manufacture, they sell, they carry on the operation of the work just as other business does. They manufacture deposits into loans and sell foreign exchange, investment, and trust services. Banks are joining with other industries in searching for the best way to go about their business; the best way to develop people; the best way to improve conditions in the business.

After several years experimentation the Irving Trust Company has decided that one important means of making progress along all of these lines is through the preparation, installation and use of organization charts and manuals of procedure. These are not magic "cure-alls"; they do not take the place of well-understood and time-tested methods of management. They are, however, important aids to management in accomplishing results along the lines indicated. In more concrete words, manuals of procedure and organization charts can be of great assistance in helping the entire staff in

1. Comprehending the task to be done.
2. Actually performing the task.
3. Aiding the making and carrying out of suggestions.

Why Charts and Manuals Are Used. In the Irving Trust Company several banks have come in through consolidations. Naturally, each of these had its own methods of operating; each was as individual as the people who made up its staff. In order to bring about similarity of organization and harmonious operation study was given to the development of a practical plan which would enable the company to function with greater ease and simplicity and in a manner which could be understood by all. A simple form of organization was adopted; all activities were classified by functions; and the territory served by offices was arranged geographically. A program was developed for the preparation of organization charts and manuals of the company's procedure, and methods for their constant revision. The program had two distinct parts:

1. Making a comprehensive plan for the preparation of charts and manuals, and a program for their continual revision.

2. Having members of the company's executive and clerical staff, as coauthors, actually carry out the various phases of the plan and program.

The Value of the Process of Preparing Charts and Manuals. That the process of preparing the charts and manuals has been valuable to the company has been demonstrated by the gain in knowledge and comprehension of the company policy, purpose and procedure on the part of all the employees. The preparation has been a means to an end. For though the manuals and charts are exceedingly useful, they are, in a sense, only the symbols of a process which is gathering momentum as it goes along and which is never ending, never complete. It will never end or be complete so long as the company continues to grow progressively. Experience is proving that the process is as important as the product.

Procedure Is Simplified by Use of Charts and Manuals. In carrying out this program the work has been simplified, many unnecessary forms have been eliminated, and better ways of doing things have been found.

It has meant improved operating conditions in the company, and most important of all, it has meant the discovery of numerous individuals in the company with fine qualities and splendid potentialities. These individuals might not have manifested themselves so soon, if the opportunity to take an active part in this program had not been given to them.

The work of carrying out this program has been correlated by a committee of five, designated as the "general guiding methods committee," the secretary of which serves as the editor of all the manuals.

Preparation and Use of Organization Charts and Manuals of Procedure. As a start in the development of the manuals program a description of the activities of every department in every office of the company was prepared. This was accomplished by having every department head and his assistants write a short description of just what they did in their department and state who did the work. In addition, each department head prepared an outline chart of his department and its sections, showing the relation between them. The material on each department was reviewed and passed upon by the officers in immediate charge of the activity. These descriptions and charts portrayed the work in the company exactly as it was. Two especially important results grew out of having employees prepare the descriptions of their work:

1. They learned something about charting and the preparation (in writing) of methods of procedure.
2. Data were provided for an analysis of the entire company.

A careful analysis of the material was made in order to see just what every office of the company was doing. Following this study, a simple type of organization was adopted.

Activities of the Company Are Arranged by Functions, and Offices by Geography. The functional type of organization has much to do with the manner in which the process mentioned previously has developed. The organization may be described as follows:

The company is made up of thirty offices—twenty-nine banking offices, for customers, and a General Office. The activities of all offices are arranged alike

into seven functional divisions—Deposit, Credit-Loan, Foreign Exchange, Investment Service, Corporate and Personal Trust, Business Extension, Interior Service. Into each group have been gathered all of the activities which should logically be together, arranged by department, then by section, then by unit. The seven divisions are arranged in three major groups—production, sales, interior service (an instrument of general administration)—just as the activities of any business can be arranged. The banking offices serve the customers of the company. The general office serves the banking offices and has no direct contact with customers. Though all offices are arranged alike in divisions, the activities of the general office are divided into three classifications—cooperative, coordinating, and proprietary.

1. By cooperative is meant assisting the offices in doing that part of their work which can best be done in one place instead of thirty, such as clearing checks, purchasing equipment and supplies, employing people, etc.

2. By coordinating is meant aiding the continuous development of better management methods for the entire company, by the study of performance reports and records of offices, the preparation of manuals of procedure and policies, the carrying on of research.

3. By proprietary is meant attending to those matters relating to ownership responsibilities, such as the keeping of records of the Board of Directors, stockholders' lists, investing stockholders' funds, etc.

The Start and Follow-up of Manuals. In this arrangement of the company the coordinators, all of whom are staff officers, play an essential part. They act as the keystone of the plan. Every divisional activity of the company has a coordinating officer with as many assistants as are necessary. The coordinators act as staff assistants to the president in reviewing and developing each of the seven divisional functions of the offices. To the coordinators are referred all questions of policy and procedure. Through them the guiding methods committee obtains the material for the manuals of procedure. They also pass upon, approve and issue to the offices the manuals of procedure covering their respective activities.

A Comprehensive Plan of Publications of All Activities. The plan, which is being followed in the development of the process, has been mentioned. There are eight steps in it. The first five, having to do with manuals of procedure and other informational literature about the company, are of particular concern to this paper and include the preparation of:

1. **Handbook of Information for Staff.** A small booklet given to every new employee. It states, briefly, the facts relating to the organization of the company, some general instructions, and an outline history of the company.

2. **Office Information and Directions for Staff.** A small booklet giving pertinent information about relations of employees to the company, customers, fellow employees, and certain instructions about the office in which employee is at work. All employees of an office receive copies.

3. **Summary of Activities.** A short story of the work done throughout the company, telling what and where it is but not how it is done. For all members of the company.

4. **Manuals of Procedure for All Divisions.** Books describing in detail the operation of the activities in the company—one (or more) for each func-

tional division. For the use of those concerned in a particular activity as reference and instruction books, or for any in the company desiring to become informed on the subject.

5. *Manuals of Official Policies for All Divisions.* Limited series of books setting forth the company's policy in regard to its activities. These are for confidential use of the officers concerned.

The foregoing sketch has been given in order that the background of the plan for and process of the preparation, use, and development of charts and manuals in the Irving Trust Company may be understood by readers of this paper.

The Process of Preparing the Manuals. Preliminary drafts of manuals of every department were made first. When the manuals program was begun each coordinator was asked to furnish to the general guiding methods committee detailed information about the work of every department in his activity. It was suggested that those actually engaged in the various activities in the offices might be the best ones to prepare the information. So each coordinator discussed with the department heads what was wanted and requested them to have members of their staffs prepare the desired material.

Many of those who took part in this work had never attempted to put into writing their knowledge of the work they were doing. Naturally, it has taken much time and thought and encouraging to get the material together this way. If the committee or some one person had prepared the information and had given it to those in the activities described to use, there probably would have been little interest displayed in it and practically no discussion of it. But when those doing the work wrote down their own descriptions, they found much to discuss, much to check up, and they began to question some of their own methods in handling their work. Those who write, also learn, and by learning, improve themselves and help to improve the methods which they use.

The coordinators receive the material from the departments and review it carefully. It sometimes needs much working over in order to have it describe the work as desired. When a coordinator feels that the manual which he is reviewing has been sufficiently completed, he sends it on to the editor to organize into the approved arrangement. The material as prepared in the departments is usually in narrative form. (No request for any particular arrangement of the material was made in the beginning because it seemed better not to have too many directions for those preparing the data. Facts about the work were the essentials.)

Editing the Material. As the information is prepared by a number of people, it reaches the editor with many types of phraseology and in a variety of forms. The editor goes over the material carefully and prepares an outline of the major points. This outline is similar to one made for a speech or a debate. When it is completed, the details of the points covered are built into the frame work, and note is made of irregularities found in the text submitted. This simple form of outline sometimes brings out many irregularities, such as incompleteness of description or illogical sequence of operation. To the revised text are added summary pages and charts of the activities and pertinent illustrations of actual operations, machines, forms, and processes.

The material in this new form is then returned to the coordinator for further review. Sometimes the material passes back and forth a number of times between coordinator and editor before final approval. When it is finally approved, a copy is forwarded to the president, who reviews all of the manuals. Upon the president's approval the manuals are prepared for the printer.

In the twenty-five to thirty departments of the seven functional activities of the company there are from fifty to several hundred persons who have something to do with the preparation of the material. All material is correlated, however, by the same editor for the obvious purpose of securing uniformity of style and arrangement.

The First and Second Editions. The early books of the first edition were set up in a simple inexpensive fashion as it was planned to replace them promptly by a second, more comprehensive edition. Zincograph, a photographic reproducing method, is used for the text, and flexible loose-leaf covers for binding. Recently, substantial, more permanent covers have been used, and similar ones are being planned for the second edition, now in process. It is expected in the second edition to have the books so arranged that they may be kept perpetually up-to-date without the necessity of rewriting the entire volume. In preparing this edition the comments and criticisms on the first edition, as received from the officers and members of the staff, are carefully reviewed. As a result, the second edition represents a composite of all of the best practices being followed in all of the offices, and will aid in establishing more uniform procedure throughout the company.

The Number of Copies Issued. Enough copies of a manual are printed to provide every officer in the company, and every member of the staff in the activity concerned with a desk copy. Additional copies for the company library, other members of the staff, and for reserve are printed. This means that for each activity there are prepared from 300 to 1,000 copies.

Distribution and Check-up Plan. This plan makes sure that every person who is entitled to a copy of a manual will receive one and will review it. When the manuals are received from the printer, the coordinators have the responsibility of distributing them. The plan of distribution so far followed has consisted of three parts:

First, a letter from the president is prepared to accompany manuals sent to all officers. This letter states briefly the reasons for the manuals and asks each officer to review his copy and send to the president, by a certain date, any comments which he may have to make on the work. Letters and manuals are sent to all officers simultaneously.

Second, after the officers have reviewed the manuals, copies are sent to every member of the activity in every office with a letter, and a review form for the recipient to fill out and return. This form contains four questions:

1. What are the differences between the methods you use and the methods described in the manual? State variations.
2. What operations carried on in your department are omitted from the manuals? Describe fully.
3. What operations described in the manual are omitted in your department? State page and subject heading.

4. What methods used in your department are, in your opinion, better than those described in the manual? Outline your methods in detail and give reasons for your opinion.

After every person working in the activity in every office of the company has thus had an opportunity to answer these questions, the result is a rather comprehensive report on the possible variations in the practices as followed in the different offices; and a valuable collection of data to use for the second edition of each manual.

Third, all of the reports from the staff members are carefully checked by the coordinator or his assistant, and helpful suggestions and criticisms are incorporated into the second edition.

Continual Research for Improvement of Methods. One of the regular duties of the coordinator of each function is the study of methods and the search for newer, better ones. This procedure is necessary in order to maintain steady effectiveness in the company's methods. As better methods develop, the manuals serve as a means for putting the improved methods into actual practice.

Results of This Method of Preparation. Having the people doing the work prepare their own directions has brought about some interesting results. Among them, several are worthy of especial note:

1. Employees take pride in the fact that they have had a part in the preparation and development of the manuals.
2. Employees gain a broader viewpoint regarding all of the company's activities.
3. Above all, this method of preparation provides a means
 - a. Continuously to follow up and revise methods.
 - b. To keep all members of the company advised periodically of changes in methods.
 - c. To afford every one in the company a ready opportunity to submit suggestions regarding procedure.
 This helps to solve a problem frequently baffling in large corporations.

The Manuals Are Used in Various Ways. The first edition of the manuals is being used primarily as a means of checking up all procedures in all departments in all offices of the company. The instructions in the manuals represent the best way of carrying on an activity at the time the information is written. But they are all subject to change, of course, and this is understood by those using the books.

The manuals are also being used as reference books when questions regarding correct procedure arise. This use takes into consideration, always, the fact that the books are not "standard practice" for all time, but are being constantly brought up to date. A third use being made of the manuals is as guides in instructing new members of the various activities. In this they are proving extremely helpful.

Summary. Thus the Irving, when the program is completed, will have a collection of material in the

Seven detailed manuals of procedure,
Seven detailed manuals of official policies,

One summary of activities,
One handbook of information,
One office information and directions booklet,

which is being developed continuously, with the aid of the staff, to be used for these principal purposes:

1. To provide an organized, classified, written description of what should be done and how it should be done, in each and every activity of the company.
2. To enable all present and future employees readily and quickly to become familiar with the general purposes and policies of the company, and their own work in particular.
3. To provide a basis for comparing the actual performance, in any given activity, with written standard practice.

THE HEALTH OF OFFICE WORKERS

BY LEVERETT D. BRISTOL, M.D. Dr. P.H., *Health Director, American Telephone and Telegraph Company*

The Health Status and the Needs of Office Workers. The Office Worker as an Individual

a. Sickness and Sex. Without attaching undue significance to the commonly observed fact, it should be mentioned in passing that other things being equal, there is for the public in general a greater prevalence of sickness among women than among men. Moreover, according to a study carried on over a period of years by the United States Public Health Service of about thirty-five industrial sick-benefit associations, it was brought out that of their cases of disability lasting longer than one week, female members were disabled from sickness more often than males to the extent of 50 per cent in the period 1921-27. The higher rate was not attributable primarily to conditions of the puerperal state nor to diseases of the female genital organs, because most of the reporting associations pay benefits only for ailments common to both sexes.

Consideration also must be given to the fact that the nature as well as the amount of illness differs according to sex. For example, evidence is available which indicates that in the general population, young women during the age period from fifteen to twenty-five show a much higher rate for tuberculosis than do young men. In the study referred to above, comparing the nature of illness according to sex, one finds that "the frequency of eight days or longer cases among women was more than twice that of the male rate for diseases of the nervous system, diseases of the pharynx and tonsils, appendicitis, the genito-urinary group, exclusive of nephritis, the general disease group, and for ill-defined and unknown causes." However, among women the rates for hernia, pneumonia, rheumatism, diseases of the veins, bones, joints, and organs of locomotion were considerably less than among the men.

b. Sickness and Age. In any analysis of the sickness experience of an industrial group such as office workers, or in the planning of a health program,

the facts regarding the distribution of employees by age also are of interest.

From such observation as I have been able to make among office workers with over two years' term of service, frequency rates of sickness over seven days' duration are fairly constant between the ages of twenty and fifty; before twenty the rates being less and after fifty higher, the latter rates being proportionately higher for women than for men.

c. Sickness and Term of Service. Various industrial morbidity studies would seem to indicate, at least when short-term illness is included, that the frequency tends to be lower in every age group among employees of five or more years' service than among those who had been working less than five years. Frequency of sickness cases over seven days' duration, of office employees with over two years term of service, does not show any significant difference from the standpoint of increasing term of service.

d. Sickness and Marital Condition. Such information as is obtainable on the question of sickness of married women in industry, indicates that as a class, women who are working and maintaining homes for their husbands, show a slightly poorer record of sickness disability than single women. The most striking contrasts between the two groups are likely to be found in the common respiratory illnesses and disorders of the nervous and digestive systems. It is unfair, however, to generalize on the strength of such comparisons, because industry is full of married women who adjust their home affairs and business careers so efficiently that their health is certainly as good as and oftentimes better than that of the unmarried girl who is more inclined to tax her bodily endurance with various forms of amusement and pleasure. The sickness experience of married women in office positions will be found to be influenced by the natural consequences and accompaniments of marriage, and by the poor records of a relatively small number of women whose double burden of work is too heavy.

e. Causes of Sickness. While births and deaths in most communities are now accurately reported and recorded, according to the requirements of law, the vast majority of cases of public illness in a community are not required to be reported. Only about five per cent of all cases of illness, chiefly those of a communicable nature, are made reportable by law. In other words, in ninety-five per cent of the cases of sickness there is very scant and incomplete knowledge as to their absolute and relative prevalence. For this reason it has been practically impossible in the past to compare the sickness of industrial groups, from the standpoint of "causes," with any known public standards.

A recent twelve months' morbidity survey of sickness in rural New York State, including a total estimated population of 100,000 out of which there were 98,069 recorded cases of sickness, is at least of interest in this connection as showing the distribution according to causes of the non-reportable, as well as reportable diseases in a cross-section of the public. In this study of public sickness it was found that the leading cause was colds, including influenza, with 28.3 per cent of all cases. Digestive disorders were responsible for 14.6 per cent followed by operative and traumatic surgical cases (except gynecologic), 13.7 per cent; 56.6 per cent of all cases of sickness were listed under the above three heads. Following these, of the more important causes

neuroses (or all types of sickness based on a functional disturbance of the nervous system) comprised 7.8 per cent and tonsillitis 6.2 per cent. The survey also showed "that the diseases responsible for the bulk of mortality play a comparatively inconspicuous role among the causes of prevailing ill health."

In general, industrial experience would seem to indicate that respiratory cases constitute by far the largest class of illness and are responsible for most of the fluctuations in the disability rate from month to month and year to year.

f. Causes of Death. While pulmonary tuberculosis as a cause of death now ranks for the public in general below heart disease, pneumonia, and even cancer in many communities, tuberculosis of the lungs is still considerably in the lead as a cause of death in this group of office workers, more so for females than for males. Heart disease, influenza, pneumonia, and kidney disease follow in order of frequency. These facts probably reflect chiefly the young age group rather than a particularly hazardous occupation.

The Environment of Office Workers

a. Sickness and Size of Community. Among the public in general it has been said that apparently, the larger the community the higher the sickness rate, and vice versa. In the morbidity survey of rural New York State, mentioned above, there were nine hundred and ninety-four cases of illness reported per physician in the larger incorporated villages and six hundred and forty-eight cases per physician in the small towns and unincorporated territory. It must be granted, however, that such figures may not be entirely trustworthy and significant as an indication of more sickness in cities and towns, as compared with rural districts. It may be in the country a question of the lack of availability, the greater distance and the higher average cost of medical visits and care. According to a recent study, "the average farm family in the United States is 7.03 miles from the nearest doctor, and the charge for a call to the home of the average farm family is \$7.63." As compared with the city resident, the farmer depends on "home remedies" and calls the doctor as a last resort. If a true census could be taken it probably would be shown that such a practice leads to more sickness in the country than otherwise would be the case.

b. Effect on Health of the Number of Workers in Office or Building. While no reliable data are at hand which would indicate conclusively the effect on health of the number of workers in an office or building, the general opinion is that the larger the office or building, the more opportunity there is for the spread of so-called "crowd" or "spray-borne" diseases through discharges from the upper respiratory tract. Overcrowding is a distinct menace to health. It must always be borne in mind, however, that a small office or building may be, and frequently is, more crowded than an office or building of larger size. Apparently the linear distance between workers in an office is even of more importance from a health standpoint than the number of cubic feet of air space per person. The closer the contact, the greater is the opportunity for the transmission of infection.

c. Advantages and Disadvantages of an Office Environment. In a sense, office workers lead a somewhat "protected" life from a physical standpoint. They are not so subject to the extremes of weather conditions as are the

outdoor workers, and they escape to a certain extent the hazards of various other indoor industrial pursuits involving accidents, dust, and various chemicals, gases, and fumes.

On the other hand, they have not the benefits of so much fresh air, sunlight and exercise as outdoor workers, and their work tends to be of a sedentary, monotonous nature, often leading to various mental as well as physical ills. The more they are crowded together, the more they suffer from crowd diseases. Moreover, in any consideration of this group from a health standpoint, the fact that individuals of subnormal physical condition and endurance tend to gravitate toward indoor office work, must be taken into consideration.

The features of an office environment which are of particular importance from a health viewpoint are lighting, heating and ventilation, and seating. There are other factors such as wages, hours of work, rest pauses, sanitary toilet facilities, recreational opportunities, and adequate provision (at least in large offices and industries) for wholesome lunches, which have a definite relation to the health, efficiency, and morale of office workers. Most of these features, however, are of approximately equal value to all workers in industry and need not be discussed at this time. There are one or two of these environmental factors which it might be well to emphasize particularly for office workers.

d. Ventilation, Heating, and Lighting. The problems of ventilation, heating, and lighting are intimately associated with climatic and weather conditions. One of the more recent findings, with reference to the bearing of climate and weather on health, is that much of the illness due to diseases of the upper respiratory tract prevailing in the winter and spring is associated more with the amount and periods of precipitation (rain and snow) than with low temperature. Apparently chilling of the body, due to rapid evaporation of body heat caused by wet clothing, shoes, and stockings, has an influence of importance in the causation of colds and other common diseases of the nose, throat, and lungs.

One of the most serious health problems of the average office is that of ventilation. The fundamental requirements for good ventilation are: proper temperature (68 to 70°F. for average office-working conditions), a moderate relative humidity and sufficient but not too great movement of the air. The thermometer is still the chief guide to good ventilation and should be found in all offices. Better than depending on a single thermometer at one point in a room, it is desirable to have two or three instruments at different points. It should be the practice to note temperature readings at regular intervals on an office record, and to take the necessary steps to control the same as need arises.

As a rule, fairly satisfactory facilities and conditions exist in offices from the standpoint of heating. There is a tendency to overheat, rather than to underheat. In this connection the problem of the difference in weight and styles of dress of women office workers must be taken into consideration, and possibly more definitely supervised and controlled. Side by side in the same office often may be noted three or four different types and weights of dress, largely dictated by style and the personal whims and habits of the individual. One clerk may be wearing a short-sleeved dress of very light weight material;

next to her may be a girl with a heavier dress and long sleeves; adjacent to her may be one with not only a fairly heavy dress, but in addition, a smock (or what amounts to a light overcoat) over it, and still another may be wearing in addition to a dress a rather heavy sweater! It is, of course, difficult under these conditions to furnish a temperature, humidity, and movement of the air satisfactory to all individuals.

In southern states, and during the hot summer months in all offices, the problem of adequate cooling may be most acute. The use of fans, some of which should be placed along the floor, keeps the air in more rapid motion and facilitates the evaporation of heat from the bodies of the workers, thus making them more comfortable.

In some cases it may be necessary to give careful consideration to various methods for conditioning the air of offices, not only in the interest of satisfactory service, but in the interest of the health and welfare of those employees who have to work in these rooms. It may be that we shall have to revise our ideas about "the best room temperature" and "the best relative humidity" for office employees. Certainly there is no relative humidity that may be designated as "normal" or "average" because it depends so much on other factors; and even the sanitary gospel of "68° F. room temperature" may have to be revised to meet the needs of modern styles and habits in clothing. There is already a significant tendency to consider a so-called "effective temperature scale" which attempts to measure the effects of dry bulb and wet bulb temperatures and velocity of air, including a "zone of comfort," instead of depending on the single dry bulb reading.

Lighting of offices may range all the way from the bright, natural sunlight of outside offices to the rather subdued and often dim light of inside rooms. The fact must be borne in mind that disease germs grow and reproduce more rapidly in rooms from which sunlight is absent. Sunlight is one of the most efficient germicides, while at the same time it serves to enrich and vitalize the blood and tissues of the human body.

Recent investigations tend to demonstrate that ordinary window glass transmits very little of the health giving ultra-violet rays of sunlight. Experiments are being carried on by different industries to determine the possible value and practicability of the substitution of specially manufactured glass, which is said to transmit a considerable amount of ultra-violet light, for the ordinary window glass now in use. In this connection it should be observed that no matter what the type of glass may be, in many of our large cities, little or no ultra-violet rays reach the window on account of smoke, dust, fog, etc. Any cooperation or assistance which those interested in business management may render to public health authorities in their campaigns for the abatement of the smoke nuisance is in the interest of the health of such groups as office workers.

e. Special Working Conditions. Even in the same office, the health problems of individuals may differ according to their special duties and responsibilities. Machine workers, including stenographers, typists, and comptometer operators are more subject to posture and monotony fatigue than are clerical workers. Likewise routine, supervisory, and executive office

workers may differ in their reaction to monotony—with the routine worker more prone to fatigue.

The chief health problem of the executive, who is usually of the older age group as compared with the younger routine worker, is that of the insidious so-called "degenerative" diseases which have their onset or become evident with advancing years. Cancer, heart disease, kidney disease, and such associated conditions as arteriosclerosis and hypertension must be considered more vital problems of the office worker than colds, influenza, digestive and nervous disorders, from the standpoint of the executive of advancing years and term of service.

Suggestions for Dealing with the Health Problems of Office Workers
Essentials of an Industrial Health Program. Industrial hygiene has come to occupy a leading place in the field of public health. In reaching its objectives the following measures are considered essential by leading authorities: (1) selection of applicants and their assignment to suitable employment; (2) assistance to employees in their own health maintenance and in recovery from disease or accident; (3) sanitary supervision of working environment and social assistance in home and community problems; (4) research to improve methods and results and to extend the knowledge of industrial health. It is to be assumed that all of the above essentials, so far as is practicable, should be incorporated in a coordinated health program for office workers.

Characteristics of the Office Worker Group. In dealing with the health problems and needs of office workers, an adequate program must take into consideration the facts that the great percentage of such individuals (1) live in cities; (2) work in fairly large groups; (3) are of the younger ages; (4) are single and of the female sex. Moreover, the office worker is on duty approximately eight hours a day. What of the other sixteen hours? There is a very close relation between community and home life and office work that cannot and should not be forgotten. Any comprehensive program for the health of office workers must reach back from the office into the community and home, and concern itself with the individual habits and modes of life. This requires tact and friendly cooperation, but should not lead to paternalism.

Importance of Personal Hygiene. Modern public health practice in the last fifty years has progressed from its strictly "environmental" state, when the questions of sanitation and environment were of paramount importance to the newer era which concerns itself chiefly with the individual human "machine." In other words, health practice, even in industry, has become largely a question of personal hygiene.

As has been the case in the evolution of so many of our human accomplishments, the more simple health problems have been solved first, leaving the more complex for later consideration. The accomplishments of the so-called "era of sanitation" naturally preceded those of the present "era of personal hygiene" largely because the problems involved were more simple. It is easier to control our environment than it is to control ourselves. It is vastly more simple to chlorinate a public water supply or to pasteurize a milk supply to protect the health of millions of people, than to control one individual's conduct and to make him live properly and follow the reasonable rules

of health. For this reason, it has been much easier to eradicate such diseases as yellow fever, typhoid fever, hookworm, and malaria, than to control tuberculosis, syphilis, gonorrhoea, heart disease, cancer, influenza, or the common cold. The slogans of the older era were "control" and "legislation." The key word of the modern health movement is "education." The latter may be slower, but is surer.

Preemployment Physical Examinations. The tendency in industry to use more care in the selection of applicants through preemployment physical examinations should, of course, apply as much to office workers as to others in the industrial group.

According to the general opinion of authorities in this field, "the physical examination may be called the keystone of industrial health work." The chief objects and advantages of physical examinations, as summarized by the National Safety Council, are:

a. Objects.

1. To place the worker in the occupation which suits him best.
2. To detect the presence of remediable physical defects in order to enable the worker to correct them.
3. To determine the presence or absence of serious organic disease, either of which may have an important bearing on employment selection.
4. To prevent occupational disease, by excluding susceptible workers from specific hazards.
5. To prevent the spread of communicable disease by the exclusion of infected persons.

b. Advantages.

1. Presents a favorable opportunity for health education.
2. Enables the early discovery of disease.
3. Makes possible the proper placement of the worker.
4. Helps to prevent or lessen the effects of epidemics.
5. Tends to reduce absenteeism, when used as a part of a health service.
6. Is a factor in lessening accident occurrence.
7. Reduces the possibility of unjust claims for injuries.
8. May increase efficiency and production through proper placements.
9. Provides a means for economic control of future medical expense.

The council states:

Protection for the worker, the fellow workers and the industry are the chief motives which should actuate the inauguration of this important industrial health measure. Physical examinations should never be made solely with the idea of weeding out the unfit.

It is suggested that the greatest needs in the further extension of physical examinations of applicants for employment are: (1) the development of standardized methods based on suitable standards of classification and acceptance; (2) the adoption of a minimum standard form or record card for use in such examinations; (3) adequate follow up to insure the highest possible number of corrections of defects and abnormal conditions found.

It probably would be unwise at this time to attempt to require, for office workers as a whole, routine medical examinations of all applicants for employment. This is a matter which of necessity must largely be decided by

management on the basis of local conditions, needs and facilities. Such examinations by experts, preferably medical, should be constantly encouraged and adopted as rapidly as is possible and feasible.

Management's Opportunities and Responsibilities for the Health of Office Workers. After a worker has been accepted for employment, management has certain opportunities and responsibilities for the health of the employee, including: (1) healthful working conditions and environment; (2) facilities for health education and supervision; (3) diagnostic facilities and aids; (4) emergency medical and social treatment of cases of sickness and accident. The great question with all those interested in management who want to improve the condition of employees in general, including office workers, is or should be, how to get employees to try to improve themselves.

a. Working Conditions and Environment. The health needs of office workers, from the standpoint of good ventilation, proper heating and adequate lighting of offices have been mentioned. It is unnecessary to dwell on the fact that herein lies one of management's chief obligations for the health of office workers. Suitable seating facilities which will be conducive to proper posture also should be of constant interest to management. Improper posture leads to poor work and ill health.

In this enlightened age it is hardly necessary to emphasize the relation to health and efficiency of such factors as hours of work, rest pauses, luncheon periods, and general sanitary and toilet arrangements. For large offices and industries this involves among other things, the development and maintenance of rest and recreation rooms, lunch rooms and cafeterias. Not the least important provision is for sufficient, sanitary locker space for coats, hats, rubbers, and umbrellas. If precipitation in the form of rain and snow, with the opportunity for wet clothing and chilling of the body, has a direct relation to the onset of upper respiratory diseases, and if these diseases are the leading causes of sickness disability among office workers, then surely the development and maintenance, in large offices at least, of a so-called locker-room loan collection of stockings, rubbers, umbrellas, and other articles of clothing to be used by employees in cases of emergency is a measure to be encouraged by management.

b. Periodic Health Examinations. A number of the larger industrial organizations, through their medical departments, make available for office workers periodic health examinations, while others at least take steps to encourage their employees to go periodically to their family physicians for such examinations. While the value in general of these examinations to the individual is now generally recognized, their practical application from the standpoint of management and working forces must be carefully considered. To have employees examined periodically by company physicians should be secondary to the education of employees as to the value of an occasional physical check up even by their own or any well-qualified doctor. As a rule, examinations should not be required or compulsory, but considered only as a voluntary matter on the part of the individual. Moreover, all results of such examinations should be kept strictly confidential between the employee and the examining physician. If the original applicant examination is of value in helping to make the person fit for the job, the periodic examina-

tion of employees is of value in making them fit to continue indefinitely in their jobs with satisfaction and contentment. In other words, even so valuable an instrument as the periodic health examination is of little ultimate worth if not intelligently followed up by attention to and correction of defects or abnormal conditions brought to light by these physical inventories.

In the development of any plan for periodic health examinations of office workers, special emphasis should be placed first on the examination of executive and supervisory forces, of older age groups, and of those who are known or suspected to have impairments.

c. Health Supervision. Physical examination of applicants for employment and periodic health examinations of employees, considered above, are inspection measures which are of value only in so far as they are followed up by and related to a continuous and well organized program of health supervision.

By health supervision in industry is meant a fixing of responsibility for the health of individual employees at least during hours of work, on the person to whom such employees report. Following are some of the suggested ways in which supervisors in large offices may be ever watchful of the health of employees working under them:

1. Keep and follow the attendance records of employees, noting absence due to incidental or short-term illness, as well as those due to longer disability.

2. Carefully observe the appearance and attitude at work of individual employees, noting any slight departure from the normal.

3. Refer cases early and promptly to the medical department, or to their own family physician, when any evidence of incipient disease, abnormal condition, or repeated accidents are noted.

4. Observe and keep a record of all important working conditions, particularly temperature, air movement, light, posture, etc.

5. Maintain a proper supervisory relation with each individual in order to guard against any mental maladjustments and to promote mental health.

d. Health Education. In large offices and industries there should be more attention given to the development and organization of facilities for addresses, lectures, and group conferences on health subjects. Regular magazine or house-organ articles on health should be a part of every company's program; these should be supplemented periodically by special bulletins and leaflets.

Visual education on health topics should be more developed than it has been to date. Health posters should be more generally used in offices and other places of work. Motion and talking pictures and attractoscopes also should be more generally used. While health is an all-the-year-round problem, and a complete health program should be continuous throughout the year, the educational value of special campaigns should not be overlooked. As in all other lines of educational work the personal or individual method of instruction through the spoken word and demonstration is of most value. It is because of this fact that health courses for office and other employees have been so successful.

e. Medical and Social Service. A wide range of practice exists in large offices and industries so far as the organization of medical work and home visiting of sickness cases are concerned. In some instances no regular medical

unit is available, the company depending on and making use of one or more local physicians, applicants and employees going to the doctor's office for examinations and attention when necessary. In other instances practically all so-called physical examinations, hardly more than superficial inspections, are made by nurses or lay employment workers.

The majority of industries employing large numbers of office workers have medical units of their own, some of which are highly organized with medical and nursing staffs and all of the modern equipment required, while others depend on a minimum of staff and equipment. In the latter, the medical officer serves chiefly as a "contact" between the sick employee and a properly qualified physician or surgeon. Mention should be made of the value of such social and economic aids to the health of office workers, as home visiting by nurses and lay personnel workers, and the development and administration of sickness benefits.

In the larger and more highly organized industrial medical departments the following services are usually available:

1. First aid in sickness and accidents.
2. Advice on medical or surgical problems.
3. Attention to ailments of short duration and of a character not requiring absence from work.
4. Laboratory examinations, including in some instances X-ray in cooperation with employee's physician.
5. Routine physical examination for employment, or in cases of suspected disease.
6. Periodic health examinations.
7. Distribution of health literature.
8. Cooperative services with benefit committees.

Industrial medical service should not encroach upon the private practice of medicine. In the field of curative treatment industrial medicine should serve in emergencies and as an intelligent aid to and contact between employees and private physicians; it should be concerned chiefly with inspection and prevention.

*"To cure is the voice of the past,
To prevent is the divine whisper of today."*

OFFICE WORKING CONDITIONS AND EXTRA COMPENSATION PLANS

By H. J. TAYLOR, President, The Club Aluminum Co.

The Survey Covers 174,053 Office Workers. The principal purpose of this paper is to provide office managers, personnel directors and others interested, with information regarding the working conditions in a large number of representative offices. The facts presented in this paper were obtained from approximately 300 questionnaires filled in and returned by that number of concerns which are members of the American Management Association. A total of approximately 650 questionnaires were sent out and

approximately 350 were filled in and returned, giving us better than a 50 per cent return on the questionnaires.¹

There are a total of 174,053 persons employed in the offices represented in the survey. Of this number 101,220 are males and 72,833 are females. The industries represented by the concerns included in the survey are: insurance, 39; educational institutions, 26; food products distribution, 22; banks and trust companies, 19; metal manufacturing, 39; appliances manufacturing, 19; accessories manufacturing, 46; lumber companies, 8; fabric manufacturing, 11, and miscellaneous, 76—the latter including hotels, publishing houses, refining companies, public accounting, laundries, stock exchanges, radio distribution and various manufacturing industries.

Offices Grouped According to Number of Office Employees. In order to be able to compare the working conditions prevalent in the smaller offices with those in the larger offices, the concerns reporting were classified into four separate groups. Group one is composed of 62 offices which have from 1 to 50 employees, the average per office being 26. Group two is made up of 96 offices which have from 51 to 200 employees, the average per office being 119 employees. Group three is composed of 68 offices which have from 201 to 500 employees, the average per office being 331. Group four is composed of 78 offices which have more than 500 employees, the average being 1,877.

Survey Returns Classified. In submitting the results of the survey, we have classified the information under the general headings: hours of work, vacations, compensation for time off, compensation and promotion, special privileges, health and recreation, welfare and education, and general summary, in the order named.

HOURS OF WORK

Hours Per Day. The average hours of work per day, excluding Saturdays, for offices included in group one, the smallest offices, are seven hours and forty minutes. In group two the average working hours are also seven hours and forty minutes, in group three, seven hours and thirty-seven minutes and in group four seven hours and thirty-seven minutes. The results show that there is a slight decrease in the number of working hours in the large offices as compared with the small offices. Of the 304 offices reporting on this question, 39 per cent have the eight-hour working day, 53 per cent have less than eight hours to the working day, while 8 per cent have more than eight hours to the working day; the average of all the offices is seven hours and thirty-eight minutes. Seven and one-half to eight hours are the most prevalent hours of work per day excluding Saturday.

The offices reporting in group one average four hours and thirteen minutes working hours for Saturdays. Group two averages four hours, group three, four hours and four minutes; group four, three hours and fifty-five minutes, and the total of all offices reporting on this subject average four hours and three minutes. We find that the large offices, on the average, have shorter working hours than the small offices. The average of this group is eighteen minutes under group one. The total for all offices reporting shows that

¹ As of Nov. 4, 1927.

four hours of work for Saturday is the most popular; 45 per cent of all reporting have the four-hour day. Twenty-four per cent have over four hours and 31 per cent have less than four hours.

HOURS OF WORK, EXCLUDING SATURDAY

Group	Number of concerns	6	6¼	6½	6¾	7	7¼	7½	7¾	8	8¼	8½	8¾	9	Average
1	60	..	..	..	..	15	2	9	3	28	1	1	..	1	7:40
Per cent to answers in group.....	...	..	..	..	..	25	3	15	5	47	2	2	..	2	
2	98	1	..	..	..	20	4	20	8	37	2	4	1	1	7:40
Per cent to answers in group.....	...	1	..	..	..	20	4	20	8	38	2	4	1	1	
3	68	1	..	2	2	15	2	9	6	23	3	3	1	1	7:37
Per cent to answers in group.....	...	1	..	3	3	22	3	13	9	34	4	4	1	1	
4	78	..	1	1	2	14	3	18	5	28	1	4	1	..	7:37
Per cent to answers in group.....	...	1	..	1	3	18	4	23	6	36	1	5	1		
All.....	304	2	1	3	4	64	11	56	22	116	7	12	3	3	7:38
Per cent to answers received.....	...	1	0	1	1	21	4	19	7	39	2	4	1	1	

HOURS OF WORK, SATURDAY

Group	Number of concerns	3	3¼	3½	3¾	4	4¼	4½	4¾	5	6	8	8¼	8½	9	Average
1	60	4	0	10	1	29	0	8	1	4	..	1	1	..	1	4:13
Per cent to answers in group.....	...	7	0	17	2	48	0	13	2	7	..	2	2	..	2	
2	99	6	3	19	5	46	4	10	1	2	1	2	..	..	..	4:00
Per cent to answers in group.....	...	6	3	19	5	46	4	10	1	2	1	2	..	..	..
3	68	5	0	8	4	32	5	9	0	4	..	1	..	..	..	4:04
Per cent to answers in group.....	...	7	0	12	6	47	7	13	0	6	..	1	..	..	..
4	78	8	2	19	1	31	2	10	0	3	..	1	..	1	..	3:55
Per cent to answers in group.....	...	10	3	24	1	40	3	13	0	4	..	1	..	1	..	
All.....	305	23	5	56	11	138	11	37	2	13	1	5	1	1	1	4:03
Per cent to answers received.....	...	8	2	19	4	45	4	12	1	4	0	2	0	0	0	

Less Hours of Work during Summer Months. Three hundred and one offices replied to the question "Have you less hours of work during summer months?" Two hundred and fifty offices, representing 83 per cent do not have fewer hours of work during summer months, while 17 per cent do have. It is quite evident that the practice of providing shorter working time during summer months is not general and cannot be considered as standard practice.

A number of concerns are closing the office on Saturdays in order to provide better opportunities for outdoor recreation over the week ends. Some of these offices find the improvement in the health of their employes, because of the outdoor recreation together with improved morale and good will, have resulted in the reduction of hours being a good investment on the part of the office. It is interesting to note that the smaller offices are not as active in providing fewer hours of work during summer months as the larger ones. Banks and trust companies appear to be the leaders in providing fewer working hours during the summer months.

LESS WORKING HOURS IN SUMMER MONTHS

Group	Concerns answering	$\frac{1}{2}$	1	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	$4\frac{1}{2}$	5	$5\frac{1}{2}$	$6\frac{1}{2}$	$10\frac{1}{2}$	11	Allow shorter hours	Do not allow shorter hours
1	59	...	2	..	3	..	3	..	1	..	..	..	..	..	9	50
Per cent in group	...	...	3	..	5	..	5	..	2	..	..	..	..	..	15	85
2	96	1	3	1	5	..	1	..	..	..	..	..	..	..	12	84
Per cent in group	...	1	3	1	5	..	1	..	..	..	..	..	..	..	13	87
3	68	1	2	1	2	..	2	1	1	..	1	..	1	..	14	54
Per cent in group	...	1	3	1	3	..	3	1	1	..	1	..	1	..	21	79
4	78	2	3	4	3	..	1	..	1	1	1	1	..	..	16	62
Per cent in group	...	3	4	5	4	..	1	..	1	1	1	1	..	..	21	79
Total.....	301	4	8	4	7	11	2	7	1	2	1	2	1	1	51	250
Per cent of total..	...	1	3	1	2	4	1	2	0	1	0	1	0	0	17	83

Rest Periods. It is interesting to note the difference in the policies regarding rest periods in the small offices as compared with the large ones. Just 10 per cent of the offices in group one provide rest periods, while in group four, the largest offices, 38 per cent provide rest periods. The most popular length of time for a rest period seems to be from ten to twenty minutes. Of the total of 302 offices reporting, just 22 per cent provide rest periods. These results show that rest periods can hardly be called a standard working condition but it is evident that there is a gradual movement towards rest periods particularly in the larger offices. It has been found by tests in a number of these offices that greater production is obtained on the part of detail workers such as comptometer operators, typists, ediphone operators, ledger clerks etc., when rest periods are provided.

A number of the offices reporting provide two or three minutes for light physical exercises during the rest periods. While the rest period cannot be considered a standard working condition of larger offices, at the same time, especially with certain groups of detail workers, it is worthy of investigation on the part of office managers and others in charge of the administration of offices.

REST PERIODS

Group	Concerns answering	5	10	15	20	30	40	50	Time not shown	To some employees	Do not allow	Total giving rest periods
1	60	0	1	0	1	2	0	0	0	2	54	6
Per cent in group.....	...	0	2	0	2	3	0	0	0	3	90	10
2	96	2	0	2	5	3	0	0	1	0	83	13
Per cent in group.....	...	2	0	2	5	3	0	0	1	0	86	14
3	68	1	3	0	9	1	1	0	0	1	52	16
Per cent in group.....	...	1	4	0	13	1	1	0	0	1	78	24
4	78	0	11	4	5	5	0	1	2	2	48	30
Per cent in group.....	...	0	14	5	6	6	0	1	3	3	62	38
All.....	302	3	15	6	20	11	1	1	3	5	237	65
Per cent of total.....	...	1	5	2	7	4	0	0	1	2	78	22

VACATIONS

Vacation Allowance. The answers to the question "How many days vacation is the usual allowance for the majority of your employees?" were quite uniform. Two hundred and sixty-nine of the 304 offices answering this question provide twelve working days' vacation with pay. All of the four groups were quite uniform on this policy. Of the total reporting just 6 per cent provide six days and 4 per cent provide from twelve to eighteen days' vacation. It is quite evident that twelve working days' vacation is the standard vacation allowance.

DAYS VACATION PER YEAR

Group	Concerns answer- ing	Number of days								To 12	Above 12
		6	6 to 11	12	13 to 17	18	24	25 to 29	30		
1	60	3	0	52	3	0	1	0	1	55	5
Per cent in group.....	...	5	0	87	5	0	2	0	2	92	8
2	96	7	2	85	0	2	0	0	0	94	2
Per cent in group.....	...	7	2	89	0	2	0	0	0	98	2
3	68	3	0	58	4	2	1	0	0	61	7
Per cent in group.....	...	4	0	85	6	3	1	0	0	88	12
4	80	4	0	74	0	1	0	1	0	78	2
Per cent in group. ....	...	5	0	94	0	1	0	1	0	97	3
All	304	17	2	269	7	5	2	1	1	288	16
Per cent of total .....	...	6	1	89	2	2	1	0	0	95	5

Additional Vacation for Long Service. In the smallest offices 13 per cent provide extra days of vacation for employees having long service; in group two 12 per cent; in group three 21 per cent; and in group four 31 per cent

ADDITIONAL VACATION FOR LONG SERVICE

Group	Concerns answering	Extra time given	Extra time given sometimes	Extra time not given
1	60	8	2	50
Per cent in group. ....	...	13	3	83
2	96	11	2	83
Per cent in group .....	...	12	2	86
3	68	14	1	53
Per cent in group.....	...	21	1	78
4	78	24	3	51
Per cent in group.....	...	31	4	65
All	302	57	8	237
Per cent of total.....	...	19	3	78

provide extra time on vacations for long service. This policy is in effect more in the large offices than in the small offices. Of the total of 302 offices reporting on this question, 57 offices provide extra time for long service and 237 do not provide extra time for long service. Long service is often recognized with bonuses, service buttons, etc., but it cannot be considered a standard working condition of offices to provide extra time at vacation time for long service.

Service Necessary to Warrant Vacation. The answers to the question "How long must an employee be with you before he or she is entitled to a vacation?" show that 118 of the 301 concerns answering this question require six months' service before the employee is entitled to take a vacation. The total results show that 72 per cent of the offices reporting require six months or less while 28 per cent require over six months before the employee is entitled to take a vacation. Most offices require that vacations be taken during the summer months, usually between June 1 and Sept. 1. In a large majority of offices an employee coming with the company after June 1 is not entitled to take a vacation until the following summer. A number of concerns allow one day for each month of service during the first year's service with the company. In other words, if an employee, under this policy, came with the company on Mar. 1, he or she would receive ten days' vacation that year. The most popular policy seems to be the requirement of at least six months' service before the employee is entitled to a vacation.

SERVICE REQUIRED FOR VACATIONS

Group	Concerns answer- ing	Months					Not shown	Recapitu- lation	
		1	3	6	9	12		6 or less	Over 6
1	58	5	7	23	1	22	0	35	23
Per cent in group.....	...	9	12	40	2	38	0	60	40
2	96	24	10	43	3	16	0	77	19
Per cent in group.....	..	25	10	45	3	17	0	80	20
3	68	14	7	25	4	18	0	46	22
Per cent in group.....	...	21	10	37	6	26	0	68	32
4	79	17	15	27	8	11	1	59	19
Per cent in group.....	...	22	19	34	10	14	1	75	24
All.....	301	60	39	118	16	67	1	217	83
Per cent of total.....	...	20	13	39	5	22	1	72	28

Saturday Preceding Vacation Period. The answers to the question "Are employees allowed the Saturday preceding the vacation period?"

show a difference of policy between the large and small offices. In group one, composing the smaller offices, 43 per cent of the offices reporting allowed the Saturday preceding the vacation. In group two 27 per cent, in group three just 16 per cent, and in group four 23 per cent allowed the Saturday preceding the vacation period. Here we see that the small office is more lenient than the large office. Of all offices reporting, 27 per cent allow the Saturday preceding the vacation, 69 per cent do not allow it, and 4 per cent allow it sometimes. In the larger offices it is more difficult to allow the employees to take the Saturday preceding vacations, than in the smaller offices and that, no doubt, is the reason why this policy is in effect more in the smaller offices than in the larger ones. The policy of allowing the Saturday preceding the vacation can hardly be considered as a standard working condition but attention is called to the fact that in the smaller offices approximately 50 per cent allow the Saturday preceding vacations. This policy is at least worthy of investigation by individual offices but consideration of it should be on a basis of whether or not such a policy would be a good investment on the part of the office.

SATURDAY BEFORE VACATIONS

Group	Concerns answer- ing	Allow Satur- days	Not always	Do not allow	Some- times allow
1	59	25	0	32	2
Per cent in group.....	...	43	0	54	3
2	94	25	2	66	1
Per cent in group... ..	...	27	2	70	1
3	67	11	0	53	3
Per cent in group.....	...	16	0	79	5
4	78	18	3	55	2
Per cent in group... ..	...	23	4	71	3
All.....	298	79	5	206	8
Per cent of total.....	...	27	2	69	2

Extra Time for Legal Holidays. Of the offices reporting on the question "Is extra time allowed for legal holidays falling within an employee's vacation period?" 41 per cent allow extra time and 59 per cent do not. The practice of allowing extra time for legal holidays falling within an employee's vacation period is growing in favor. It has been found that employees are shunning, as much as possible, those weeks during the summer months in which there are legal holidays, such as the Fourth of July and Labor Day. This causes some difficulty in working out vacation schedules and if employees are forced to take their vacation during those weeks, they are not, in all

cases, satisfied. Some offices do not provide the extra time during the regular vacation period but give the employee an extra day off later in the year. The policy of allowing extra time for legal holidays falling within an employee's vacation period is worthy of consideration in view of the fact that over 40 per cent of the offices included in this survey now have that policy in effect.

EXTRA TIME WHEN LEGAL HOLIDAYS INTERVENE

Group	Concerns answering	Allow extra time	Allow extra time sometimes	Do not allow extra time
1	60	25	0	35
Per cent in group.....	...	42	0	58
2	95	47	0	48
Per cent in group.....	...	49	0	51
3	65	17	1	47
Per cent in group.....	...	26	2	72
4	77	30	1	46
Per cent in group.....	...	39	1	60
All.....	297	119	2	176
Per cent of total.....	...	40	1	59

COMPENSATION FOR TIME OFF

Absence Caused by Sickness or Accidents. The policy on payment for absence on account of sickness or accidents is quite uniform in all four groups of offices. Of the total of 300 offices reporting on this subject, 93 per cent pay for absences on account of sickness or accidents, 2 do not pay for such absences, and 6 per cent pay sometimes.

Proportion of Employee's Salary Paid. Eighty-six per cent of the offices reporting pay the regular full compensation of the employee during such absence and 6 per cent pay from 50 per cent to 75 per cent of the regular compensation. It is quite evident that it is standard practice to compensate employees for absences on account of sickness and accidents. The usual practice is to pay the full compensation of the employee during such absence up to a certain maximum number of weeks' pay. The usual maximum allowance is from two to four weeks' pay, some companies graduating the maximum according to length of service.

Service Required to Come under Plan. It is hard to reach any definite conclusion from the replies to the question, "How long must an employee be with you to come under this plan?" Twenty-five per cent of the offices answering this question do not require any particular length of service before the employee comes under the plan; 5 per cent of those reporting require

from one month to three months; 8 per cent require three months; 14 per cent require six months, and 15 per cent require twelve months or more before employees come under the absence compensation for sickness and accident plan. Of those reporting, 27 per cent stated that it depends upon the record of the employee and 6 per cent of those reporting did not answer this question clearly. Attention is called to the fact that 69 per cent of those

FOR ABSENCE CAUSED BY SICKNESS OR ACCIDENTS

Group	Concerns answering	Pay	Do not pay	Pay sometimes
1	59	55	1	3
Per cent in group.....	...	93	2	5
2	96	86	3	7
Per cent in group.....	...	90	3	7
3	67	65	0	2
Per cent in group.....	...	97	0	3
4	78	72	1	5
Per cent in group.....	...	92	1	6
All.....	300	278	5	17
Per cent of total.....	...	93	2	6

PROPORTION OF SALARY PAID BY THOSE WHO MAKE PAYMENTS

Group	Concerns making payments	Per cent of salary				
		100	75	66 $\frac{2}{3}$	50	Not shown
1	55	50	1	0	2	2
Per cent of group.....	...	91	2	0	4	4
2	86	80	3	3	0	0
Per cent of group.....	...	93	3	3	1	0
3	65	56	1	0	0	8
Per cent of group.....	...	86	2	0	0	12
4	72	53	0	1	5	13
Per cent of group.....	...	74	0	1	7	18
All.....	278	239	5	4	7	23
Per cent of total.....	...	86	2	1	3	8

reporting require a certain period of service before the employee comes under this plan. Apparently, the standard practice is to require some service before the employee comes under the plan, the amount varying from one month to one year.

SERVICE REQUIRED FOR ABSENCE COMPENSATION

Group	Concerns answering	No time	Less than 3 months	3 months	6	12 or more	All depends	Not shown
1	44	8	0	1	7	10	13	5
Per cent in group....	...	18	0	2	16	23	30	12
2	89	35	8	7	15	11	12	1
Per cent in group....	...	39	9	8	17	12	13	1
3	67	14	2	7	9	11	19	5
Per cent in group....	...	21	3	10	13	16	28	7
4	80	13	5	8	7	9	32	6
Per cent in group....	...	16	6	10	9	11	40	7
All....	280	70	15	23	38	41	76	17
Per cent of total....	...	25	5	8	14	15	27	6

Contribution by Employees. The answers to the question, "Does the employee contribute to a fund from which these payments are made?" were very interesting. We found that only 8 per cent of the offices reporting on this subject require the employees to contribute to such a fund. It is interesting to note that in the small offices only 3 per cent provide for a contribution from the employees while in large offices 13 per cent have this policy.

Compensation for National Guard Duty. Of the offices reporting on the question: "Is absence on account of National Guard duty compensated for?" 74 per cent compensate for this absence and 26 per cent do not. The percentage of offices that compensate for National Guard duty was about the same in all four groups. We, therefore, conclude that it may be considered a standard policy for offices to compensate for absence on account of National Guard duty. Some offices pay full compensation in addition to the compensation received by the employee from the government, while others just pay the employee the difference (if the government compensation is less) between the employee's regular compensation and the government pay for National Guard duty.

EMPLOYEE CONTRIBUTION TO ABSENCE COMPENSATION

Group	Concerns answering	Require employee contribution	Require employee contribution sometimes	Do not require employee contribution
1	59	2	0	57
Per cent in group..	...	3	0	97
2	93	6	1	86
Per cent in group..	...	7	1	92
3	67	6	0	61
Per cent in group..	...	9	0	91
4	77	10	0	67
Per cent in group..	...	13	0	87
All.....	296	24	1	271
Per cent of total ..	...	8	0	92

COMPENSATION FOR NATIONAL GUARD DUTY

Group	Concerns answering	Pay for National Guard duty	Do not pay for National Guard duty	Sometimes pay for National Guard duty
1	47	37	10	0
Per cent of group..	...	79	21	0
2	86	55	28	3
Per cent of group..	...	64	33	3
3	66	51	15	0
Per cent of group..	...	77	23	0
4	76	61	15	0
Per cent of group..	...	80	20	0
All.....	275	204	68	3
Per cent of total...	...	74	25	1

Compensation for Jury Service. Of the offices reporting on the question, "Do you compensate for absence on account of jury service?" 89 per cent pay for jury service while 11 per cent do not pay for such absences. The small office is just as liberal as the large office in this connection; in group one 91 per cent of the offices reporting pay for such absences, and in group four 92 per cent pay for jury service. A large number of concerns just pay

the difference between the amount obtained for jury service and the regular compensation of the employee.

COMPENSATION FOR JURY SERVICE

Group	Concerns answering	Pay for jury service	Pay for jury service in some cases	Do not pay for jury service
1	57	52	0	5
Per cent in group.....	...	91	0	9
2	90	78	1	11
Per cent in group.....	...	87	1	12
3	66	57	0	9
Per cent in group.....	...	86	0	14
4	76	70	0	6
Per cent in group.....	...	92	0	8
All.....	298	257	1	31
Per cent of total.....	...	89	0	11

Deaths in Family. About the same percentage of offices in all four groups provide compensation in case of absence on account of a death in the family of the employee. Ninety-two per cent of the offices reporting provide compensation for absence for this reason. This policy may, therefore, be considered, as a standard working condition in offices.

COMPENSATION FOR TIME OFF ON ACCOUNT OF DEATH IN FAMILY

Group	Concerns answering	Pay for time off	Pay for time off sometimes	Do not pay for time off
1	59	54	1	4
Per cent in group.....	...	91	2	7
2	94	87	1	6
Per cent in group.....	...	93	2	6
3	68	62	0	6
Per cent in group.....	...	91	0	9
4	78	73	0	5
Per cent in group.....	...	94	0	6
All.....	299	276	2	21
Per cent of total.....	...	92	1	7

Compensation for Religious Holidays. The percentage of offices providing compensation for religious holidays other than Christmas was about the same in all four groups. In groups one and four 61 per cent provide compensation for such absences. Sixty-two per cent of all offices reporting on this subject provide compensation for absence on account of religious holidays other than Christmas. It is interesting to note that more than a majority of the offices provide compensation for absence on account of the reason stated. In certain large cities, New York in particular, the policy of providing compensation for absence on account of religious holidays other than Christmas, may be considered as a standard working condition.

COMPENSATION FOR RELIGIOUS HOLIDAYS

Group	Concerns answering	Pay regular salary	Pay regular salary in some cases	Do not pay regular salary
1	54	33	1	20
Per cent in group.....	...	61	2	37
2	93	59	0	34
Per cent in group.....	...	63	0	37
3	66	40	0	26
Per cent in group.....	...	61	0	39
4	80	49	1	30
Per cent in group.....	...	61	1	38
All.....	293	181	2	110
Per cent of total.....	...	62	1	37

Absence for Appointments with Doctor. A large number of offices provide compensation for absence from work because of appointments with dentists and doctors. Of the offices reporting, in group one 76 per cent provide compensation for such appointments and in group four 74 per cent do. Of all offices answering this question, 76 per cent provide compensation for absence for such appointments, 17 per cent do not compensate for such absence or do not allow same during office hours, 2 per cent do in some cases, and in 5 per cent of the offices it is discouraged during working hours. Most concerns feel that the employees' physical condition is a company interest and that deductions from compensation should not be made for time spent in safeguarding the employee's health. Our conclusion, therefore, is that it is standard practice not to deduct for time off on account of appointments with doctors and dentists during working hours where it is necessary for the employee to have the appointment during working hours.

PAY FOR ABSENCE AT APPOINTMENTS

Group	Concerns answering	Salary paid in full	Salary paid but practice discouraged	Salary paid in some cases	Salary not paid
1	59	45	2	1	11
Per cent in group.....	...	76	3	2	19
2	91	73	8	3	7
Per cent in group.....	..	80	9	3	8
3	68	49	5	1	13
Per cent in group.....	...	72	7	2	19
4	78	58	0	2	18
Per cent in group.....	...	74	0	3	23
All.....	296	225	15	7	49
Per cent of total.....	...	76	5	2	17

COMPENSATION AND PROMOTION

Frequency of Salary Payments. The answers to the question: "How often are salaries paid?" show that of the offices reporting on this subject, 42 per cent make salary payments weekly, 50 per cent twice a month, and 17 per cent every month. In the larger offices the policy of paying twice a month is most popular and in the smaller offices the policy of paying weekly is most popular. The results show that it is standard practice to pay every week or twice monthly as 92 per cent of those reporting pay either once each week or twice monthly. Some of the concerns reporting on this question said that some of the employees in their offices are paid more frequently than others.

Compensation for Overtime. A greater percentage of the larger offices pay for overtime than of the smaller offices. In answer to the question: "Do you pay for overtime?" only 9 per cent of group one reported that they pay for overtime. In this connection, it is necessary to explain that, in all probability, many of these concerns pay "supper money" but the question was not asked on the questionnaire. In group four 29 per cent pay for overtime. Of the total of 302 offices reporting, 78 per cent do not pay for overtime other than supper money while 22 per cent pay for overtime. The results of this analysis lead one to the conclusion that it is standard practice not to pay for overtime other than supper money. There is a tendency in all offices towards cutting down overtime by increasing efficiency and production during regular working hours. In offices where a great deal of overtime is continually put in, tests have often shown that the total production of the

FREQUENCY OF SALARY PAYMENTS

Group	Concerns answering	Weekly	Every two weeks	Twice monthly	Monthly	*
1	60	34	2	21	11	8
Per cent in group...	...	57	3	35	18	
2	95	42	4	46	14	11
Per cent in group...	...	44	4	48	15	
3	71	26	2	33	15	5
Per cent in group...	...	37	3	46	21	
4	79	25	1	51	13	11
Per cent in group...	...	32	1	65	16	
All.....	305	127	9	151	53	35
Per cent to total....	...	42	3	50	17	

* 35 reports show that some employees are paid more frequently than others of the same company.

employee working overtime is not increased because of the overtime work. A large amount of overtime naturally affects personnel turnover, which brings about an expense which is not, in all cases, given consideration as being a direct cost of overtime work.

COMPENSATION FOR OVERTIME

Group	Concerns answering	Pay for overtime	Do not pay for overtime	Sometimes pay for overtime	Pay supper money*
1	59	5	49	2	3
Per cent in group	...	9	83	3	5
2	96	17	69	2	8
Per cent in group	...	18	72	2	8
3	68	14	38	1	15
Per cent in group...	...	21	56	1	22
4	79	23	43	3	10
Per cent in group.	...	29	54	4	13
All.....	302	59	199	8	36
Per cent of total....	...	19	66	3	12

* Question not asked on questionnaire. No doubt many offices, doing so, did not report it.

Recognition for Long Service. The answers to the question: "Do you give special recognition for long service?" do not provide us with material to reach very definite conclusions. Of the 261 offices answering this question, 24 per cent give it no definite special recognition, 13 per cent give time off, 14 per cent give it definite consideration in salary increases, 4 per cent give bonuses, and 45 per cent give other recognition. Other recognition really means, in most cases, consideration in connection with salary increases. The standard practice may be said to be to give long service definite recognition in connection with salary increases. Other things being equal, the individual having the longer service record is, with most concerns, given preference for promotions. Some concerns give special recognition in the form of a service button, medal, or membership in an honorary organization to those having long service records.

RECOGNITION FOR LONG SERVICE

Group	Concerns answering	Give additional vacations	Give salary increases	Give bonuses	Give other recognition	Reward in some cases	Give no particular consideration
1	42	4	8	2	21	1	6
Per cent in group	...	10	19	5	50	2	14
2	79	6	12	2	38	0	21
Per cent in group	...	7	15	3	48	0	27
3	63	12	9	3	24	0	15
Per cent in group	...	19	14	5	38	0	24
4	77	11	7	3	35	0	21
Per cent in group	...	14	9	4	45	0	27
All.....	261	33	36	10	118	1	63
Per cent of total.	...	13	14	4	45	0	24

Recognition for Good Attendance. Of the 234 offices reporting on special recognition for good attendance, 39 per cent give no special recognition, 10 per cent give time off, 15 per cent give it definite recognition in salary increases, 5 per cent give special bonus awards, and 31 per cent give other consideration. Here again, the standard policy is to take good attendance into consideration in connection with salary increases and promotions, rather than special recognition in the way of time off or bonuses. A number of offices use special contests to create interest in good attendance and award prizes to the winners. One concern reported good results from a plan of presenting two theatre tickets to each employee having a perfect attendance record for four consecutive months.

Reward for Worthy Suggestions. Very few offices have suggestion plans whereby awards are made to employees for good suggestions for improving efficiency or lowering operating costs. The replies to this question were not very clear but 31 per cent of the offices reporting state definitely that no

special recognition is given for worthy suggestions; of the balance of 69 per cent a few have suggestion plans in effect and others take it into consideration in connection with salary increases and promotions. Some concerns find it a good investment to provide the necessary machinery for a suggestion

RECOGNITION FOR GOOD ATTENDANCE

Group	Concerns answering	Give time off	Give salary increases	Give special awards	Give other consideration	Give recognition in some cases	Do not give special recognition
1	37	1	5	3	14	2	12
Per cent in group	...	..	15	7	38	5	32
2	73	6	9	5	24	0	29
Per cent in group	...	8	12	7	33	0	40
3	59	7	13	2	17	0	20
Per cent in group	...	12	22	3	29	0	34
4	65	9	7	1	18	0	30
Per cent in group	...	14	11	2	28	0	46
All.....	234	23	34	11	73	2	91
Per cent of total..	...	10	15	5	31	1	39

REWARD FOR WORTHY SUGGESTIONS

Group	Concerns answering	Give salary increases	Give other consideration	Give special recognition in some cases	Do not give special recognition
1	36	6	19	2	9
Per cent in group....	...	17	52	6	25
2	75	8	39	1	27
Per cent in group....	...	11	52	1	36
3	58	7	29	0	22
Per cent in group....	...	12	50	0	38
4	68	7	44	1	16
Per cent in group....	...	10	65	1	24
All.....	237	28	131	4	74
Per cent of total.....	...	12	55	2	31

plan and award cash prizes and give publicity to those submitting the best suggestions.

PROFIT-SHARING PLANS

Group	Concerns answering	Provide profit-sharing plan	Do not provide profit-sharing plan
1	57	13	44
Per cent in group . . . . .	..	23	77
2	95	14	81
Per cent in group . . . . .	..	13	87
3	67	12	55
Per cent in group . . . . .	..	18	82
4	77	7	70
Per cent in group . . . . .	..	9	91
All	296	46	250
Per cent of total . . . . .	..	15	85

TIME BETWEEN SALARY INCREASES

Group	Concerns answering	Every 6 months	More frequent than every 6 months	From 7 through 11 months	Annually	Intervals of 18 months	No set time	Recapitulation	
								Intervals of 6 months or less	Intervals of more than 6 months duration
1	56	12	0	2	25	0	17	12	27
Per cent in group . . . . .	..	21	0	4	45	0	30	21	48
2	93	22	6	0	40	0	25	28	40
Per cent in group . . . . .	..	24	6	0	43	0	27	30	43
3	65	11	2	1	31	1	19	13	33
Per cent in group . . . . .	..	17	3	2	48	2	29	20	51
4	72	16	5	1	30	1	19	21	32
Per cent in group . . . . .	..	22	7	2	42	2	26	29	44
All	286	61	13	4	126	2	80	74	132
Per cent of total . . . . .	..	21	5	1	44	1	28	26	46

Profit-sharing Plans. Of the offices reporting on the question: "Have you a profit-sharing plan for office employees?" 15 per cent have a profit-sharing plan while 85 per cent do not have such a plan. The profit-sharing plan is in vogue more in the smaller offices than in the larger ones. In group one 23 per cent have profit-sharing plans, in group two 13 per cent, in group three 18 per cent, and in group four only 9 per cent have profit-sharing plans. Some concerns have profit-sharing plans for executives but not for other employees.

Time between Salary Increases. Employees are given salary increases about as often in the small offices as they are in the large ones. Of the 286 offices reporting, 21 per cent have salary increases, on the average, every six months, 5 per cent more frequently than every six months, 44 per cent every twelve months, and 28 per cent were not definite. The results show that 26 per cent of the offices, answering this question, on the average, have salary promotions every six months or less and 46 per cent have increases on the average of more than six-month intervals. The policy of giving salary promotions once each year seems to be the most popular and is that used by the largest number of offices reporting.

SPECIAL PRIVILEGES

Personal Telephone Calls. Personal calls of employees on company telephones are permitted by 85 per cent of the offices in group one, 83 per cent

PERSONAL TELEPHONE CALLS

Group	Concerns answering	Allow	Allow but discourage	Not allowed	Charges		
					Charge for calls	Do not charge for calls	Charge in some cases
1	60	51	1	8	7	48	5
Per cent in group	...	85	2	13	12	80	8
2	96	80	2	14	17	76	3
Per cent in group	...	83	2	15	18	79	3
3	68	45	6	17	12	46	10
Per cent in group	...	66	9	25	17	68	15
4	78	38	5	35	13	45	20
Per cent in group	...	49	6	45	17	58	25
All	302	214	14	74	49	215	38
Per cent of total	...	70	5	25	16	71	13

in group two, 66 per cent in group three, and 49 per cent in group four. This privilege becomes less and less frequent the larger the office. Of the offices reporting on this question, 70 per cent permit the use of telephones for personal calls, 25 per cent prohibit the use of the telephones for personal calls and 5 per cent discourage the use but permit it. Just 49 of the 214 offices that permit the use of telephones for personal calls charge for them. A large majority do not charge for the local calls of employees.

Smoking during Office Hours. Smoking is permitted during office hours in 56 per cent of the offices in group one, 39 per cent in group two, 19 per cent in group three and just 15 per cent in group four. Of the 302 offices reporting on this question 31 per cent permit smoking during office hours and 66 per cent prohibit smoking and 3 per cent discourage but permit smoking. This privilege is more perfect in the smaller offices; in the larger offices there is a tendency to prohibit smoking as in group four 82 per cent of the offices prohibit smoking during working hours.

SMOKING DURING OFFICE HOURS

Group	Concerns answering	Smoking permitted	Smoking prohibited	Smoking permitted but discouraged
1	59	33	25	1
Per cent in group. ....	...	56	42	2
2	96	37	55	4
Per cent in group. ....	...	39	57	4
3	68	13	55	0
Per cent in group. ....	...	19	81	0
4	79	12	65	2
Per cent in group. ....	...	15	82	3
All ...	302	95	200	7
Per cent of total. ....	...	31	66	3

Visits of Friends. Visits of personal friends of employees are permitted by more than a majority of the offices. Of those reporting on this question 43 per cent permit the visits of personal friends, 18 per cent permit but discourage such visits, and 39 per cent prohibit such visits. The small office is more liberal than the large office in this respect.

Handling of Personal Mail. Handling of personal mail for office employees is permitted in 58 per cent of the offices in group one, while 22 per cent prohibit and 20 per cent discourage the distribution of personal mail in the office. In group two 66 per cent, in group three 46 per cent, and in group four 38

VISITS OF FRIENDS

Group	Concerns answering	Personal visits permitted	Personal visits prohibited	Personal visits discouraged
1	60	33	13	14
Per cent in group.....	...	55	22	23
2	95	46	39	10
Per cent in group.....	...	48	41	11
3	68	23	31	14
Per cent in group.....	...	34	46	21
4	77	28	35	14
Per cent in group.....	...	36	46	18
All	300	130	118	52
Per cent of total.....	...	43	39	18

per cent permit the distribution of personal mail. We find that this service is more frequently granted in the small office than in the larger office. Of all offices reporting on this question, 53 per cent permit the distribution of personal mail, 18 per cent permit but discourage, and 29 per cent prohibit the

HANDLING OF PERSONAL MAIL

Group	Concerns answering	Permitted	Permitted but discouraged	Prohibited
1	59	34	12	13
Per cent in group.....	...	58	20	22
2	93	61	7	25
Per cent in group.....	...	66	7	27
3	68	31	18	19
Per cent in group.....	...	46	26	28
4	76	29	17	30
Per cent in group.....	...	38	23	39
All.....	296	155	54	87
Per cent of total.....	...	53	18	29

distribution of personal mail in the office. While the distribution of personal mail is permitted in a majority of the offices, in many of them it is discouraged.

SERVICES FOR EMPLOYEES

Health and Recreation. These activities include first aid, home nursing, matron service, hospital service, rest rooms, noon recreation, athletic teams, social clubs, and picnics and outings. There was a gradual increase in the number of concerns participating in these activities from the smaller to the larger offices. Of the 303 offices reporting on this subject, 76 per cent provide first aid, 23 per cent home nursing, 40 per cent matron service, 38 per cent hospital service, 70 per cent rest rooms, 31 per cent noon recreation, 57 per cent athletic teams, 46 per cent social clubs, and 56 per cent picnics and outings.

HEALTH AND RECREATION

Group	Concerns answering	First aid	Home nursing	Matron service	Hospital service	Rest rooms	Noon recreation	Athletic teams	Social clubs	Picnics, Outings
1	60	32	15	7	9	21	19	15	15	21
Per cent of total.....	...	53	25	12	15	35	32	25	25	35
2	96	75	24	20	24	63	27	54	39	55
Per cent of total.....	...	78	25	22	25	66	28	56	41	57
3	68	54	15	37	38	60	18	46	42	44
Per cent of total.....	...	79	22	54	56	88	26	68	62	65
4	79	69	16	57	44	67	29	59	44	50
Per cent of total.....	...	87	20	72	56	85	37	75	56	63
All.....	303	230	70	121	115	211	93	174	140	170
		76	23	40	38	70	31	57	46	56

Welfare and Education. Special services which contribute to the general welfare and education of employees, are extended to a greater degree in the large offices than in the small offices. Of the 303 offices reporting, 32 per cent provide cooperative purchasing, 53 per cent loans, 33 per cent company stock purchase plans, 30 per cent mutual benefit associations, 59 per cent group life insurance, of whom 33 per cent require employee contributions, 38 per cent pensions, of whom 13 per cent require employee contributions, 50 per cent libraries, 21 per cent evening schools, 47 per cent employee publications, 24 per cent provide contributions to school tuition, 7 per cent musical training, 32 per cent pay roll deduction insurance, and 28 per cent group savings plans.

WELFARE AND EDUCATION

Group	Concerns answering	Cooperative purchasing	Loans	Company stock purchase plan	Mutual benefit association	Group life insurance		Pensions		Library	Evening schools	Employee publications	Contributions to tuition	Musical training	Payroll deduction insurance	Group savings plan
						Have	To which employees contribute	Have	To which employees contribute							
1	60	10	26	20	9	33	17	10	2	15	5	15	8	0	17	9
Per cent in group	...	17	43	33	13	55	52	17	20	25	8	25	13	0	28	15
2	96	30	55	27	32	55	16	32	4	42	13	38	15	8	33	27
Per cent in group	...	31	57	39	33	57	29	33	13	44	14	40	16	8	34	28
3	68	27	38	23	23	39	6	29	2	41	18	38	12	2	26	19
Per cent in group	...	40	56	34	34	57	15	43	7	60	26	56	18	3	38	28
4	79	30	41	29	28	53	21	44	7	53	27	50	37	11	31	31
Per cent in group	...	38	52	37	35	67	40	56	16	67	34	63	47	14	39	39
Total	303	97	160	99	92	180	60	115	15	151	63	141	72	21	97	86
	32	53	33	30	59	59	33	38	13	50	21	47	24	7	32	28

SUMMARY

Standard Working Conditions. Arbitrarily letting the practice of 75 per cent or more of the 305 offices reporting, represent standard working conditions, we find from the results of the summary that the following may be termed standard working conditions in offices:

1. The hours of work on week days, excluding Saturdays, are from seven to eight hours per day. The hours of work on Saturdays are from three and one-half to four and one-half hours.

2. The vacation allowance is twelve working days with pay. From one to six months' service is required before vacations are granted, and in most cases the employee must have been in the service of the company before June first to be entitled to a vacation that year.

3. Compensation is provided for employees absent on account of accidents or sickness, the regular compensation of the employee being the amount paid. A certain length of service is required on the part of the employee before he or she is compensated on account of sickness and accidents, the length of service ranging from one month to twelve months.

Employees do not contribute to a fund from which absence compensation is paid.

Employees absent on account of National Guard duty are compensated for such absence. In many cases they are compensated for the difference between the amount received for National Guard duty and their regular compensation where their regular compensation is more than National Guard

compensation. This compensation is given in addition to the regular vacation allowance.

Employees are compensated for absence on account of jury service and in most of these cases they are given the difference between the amount received for the jury service and their regular compensation when the government compensation is less than their regular compensation.

Employees are compensated for absence due to deaths in their families.

Employees are compensated for time lost on account of appointments with doctors and dentists.

4. Salary payments are made either every week or twice a month.

Employees are not given compensation for overtime other than supper money.

Employees are given special recognition for length of service, the recognition varying according to the concern, it being, in some cases, time off, bonuses, publicity and, other things being equal, preference for promotion.

The average time between salary promotions is from six months to one year, the annual increase plan being the most popular.

5. Employees are permitted to use company telephones for personal calls and are not charged for these calls unless they are long distance calls.

6. First aid and rest rooms are provided for employees.

Policies in Effect in a Majority of Offices. In addition to, or in lieu of the standard working conditions mentioned above, from 50 to 75 per cent of the concerns reporting provide the following working conditions:

1. The working day, excluding Saturday, is composed of seven and three-fourths hours or less of work per day.

From three to four hours inclusive are the working hours for Saturdays.

2. From one month to six months of service is required before vacation allowances are made.

3. From one day to six months of service is required before compensation is allowed for absence on account of sickness and accidents.

Compensation is paid for absence on account of religious holidays other than Christmas.

4. Special recognition in the way of time off, bonuses, and, other things being equal, preference for promotion is given for good attendance.

Special recognition is given for worthy suggestions on the part of employees. This consideration takes the form of prizes, consideration at the time of salary increases, etc.

5. Smoking is not permitted during working hours.

Visits of personal friends are permitted but in some cases discouraged.

The personal mail of employees is handled in the office, but this is discouraged in some cases.

6. Company athletic teams are sanctioned and supported and picnics and outings are provided for employees.

7. Company loans, libraries, and group life insurance on which the premiums have been paid by the company are provided for employees.

Policies in Effect in Less than a Majority of Offices. In addition to, or in lieu of the above working conditions, from 25 per cent to 50 per cent of the offices reporting provide the following working conditions:

1. Seven hours or less of work on week days, excluding Saturday, and three and one-half hours or less on Saturday.

Rest periods, ranging from five minutes to thirty minutes per day, are provided.

2. From one month to three months' service is required before a vacation may be taken.

The Saturday preceding the vacation period is allowed as part of the vacation.

Extra vacation time is allowed when a legal holiday falls within an employee's vacation period.

3. There is no required period of service before compensation is paid for absence on account of sickness and accidents.

4. Salaries are paid weekly.

5. Matron service, hospital service, noon recreation and social clubs are provided for employees.

6. Company cooperative purchasing for employees, company stock purchase plans, mutual benefit associations, pensions, payroll deduction life insurance, and group savings plans are provided for employees.

Policies in Which the Small Office Is More Lenient. The following working conditions are provided by 25 per cent or more of the small offices included in groups one and two and are not provided by as many as 25 per cent of the larger offices included in groups three and four:

1. The Saturday preceding the vacation period is allowed.

2. Less than three months of service is required before employees are granted compensation for absence on account of accidents and sickness.

3. Smoking is permitted during working hours.

Attention is also called to the fact that personal mail for employees is handled by a larger percentage of small offices than by large offices. Visits of personal friends of employees are also permitted in a larger percentage of the small offices than in the large offices.

More Lenient Policies of Large Offices. Twenty-five per cent or more of the offices included in groups three and four, the larger offices, provide the following working conditions which are not provided in as many as 25 per cent of the offices included in groups one and two:

1. Rest periods during working hours.

2. Extra time off for long service.

3. Compensation for overtime. This is provided by 29 per cent of the offices in group four.

4. Matron service and hospital service are provided for employees.

5. Cooperative purchasing for employees, mutual benefit associations, pensions, evening schools, contributions to school tuition, and group savings plans are provided for employees.

Attention is called to the fact that in many offices the working conditions and privileges for executives are different from those provided for other employees. This is particularly true in connection with vacations, as in many cases, three- and four-week vacations are provided for executives having great responsibilities while just two weeks are provided for other employees. It was also noticeable that the offices located in larger eastern cities are somewhat more liberal in the working conditions provided for employees than those in the western cities although we have not prepared statistics covering this subject.

CONCLUSION

In conclusion it is hoped that this survey will be of value and assistance in making decisions regarding the working conditions in offices and that it will:

1. Act as a guide on the standard and average practices of offices with respect to working conditions and extra compensation plans.
2. Give those offices now giving better than average working conditions a knowledge of this fact and enable them to so inform their employees.

This knowledge will, no doubt, result in a return to the concern in the way of greater contentment, good will and appreciation of working conditions on the part of the employee.

3. Give those in charge of offices information as to whether or not the working conditions in their particular offices are as good, or not as good as the working conditions in other offices.

The office which is not now providing as good as the average working conditions will then, no doubt, consider the advisability of providing better working conditions. Such investigations will, no doubt, in many cases result not only in improved working conditions, but also in benefits to both the concern and its employees.

CHAPTER IV

SALARY ADMINISTRATION AND PROMOTION

By H. B. BERGEN, *Director of Industrial Relations, The Procter & Gamble Company*

A plan of salary administration and promotion is, after all, a type of incentive plan. An incentive plan, to be effective, must appeal to the stronger of the worker's desires. It is generally agreed that the worker (especially the office, technical, or supervisory employee) desires first of all a "fair" salary related to the importance of his position and his performance in that position, and an opportunity for salary adjustments and promotion commensurate with his capacity and demonstrated progress. Unless these desires are satisfied, we may expect only mediocre results from other personnel activities. Of course, other devices, such as sympathetic, impartial, and efficient leadership, are needed in addition to a sound plan of salary administration and promotion, but a recognition of individual differences by means of salary and promotional adjustments is fundamental to effective personnel administration.

The need for scientific salary administration and promotion is indicated by the following drawbacks of current practice:

1. Variability in starting wage or salary for new employees of equal ability in the same position.
2. Employees frequently held in one monotonous position simply because they perform the duties efficiently and in total disregard of their ability to fill a higher grade position equally well.
3. Individuals considered too valuable in their positions to transfer yet receiving no extra financial recognition for holding them in one type of work.
4. Promotion based on seniority and limited to vacancies in the department to which the employee has been assigned.
5. Inequalities in remuneration for similar work throughout a given institution.
6. Improper relationships between the remuneration of different individuals and their respective contributions to the production of the economic good created by the enterprise.
7. Salary and wage adjustments based on seniority rather than on merit.
8. Salary adjustments obtained by the employee advising the management of an outside offer.
9. Promotion without salary or wage adjustment.

Special mention should be made of the undue amount of emphasis which is at present given, either consciously or unconsciously, to seniority as a basis for rewards. This practice is in opposition to any attempt to recognize

individuality. There is nothing more deadening to the initiative of the newly employed worker than the knowledge that some older employee performing the same grade of work with the same or lesser degree of efficiency is receiving twice or three times the salary that the new employee receives, simply because of length of service. The same is true in the case of a new employee occupying a position requiring considerable technical training (*e.g.*, in accounting or statistics) finding out that the incumbent of some routine clerical position (*e.g.*, file clerk or registered mail clerk) is receiving the same rate of pay because of the latter's seniority. Unless this length of service factor is given only minor consideration in the development and operation of an incentive plan, effective appeal will never be made to the worker's strongest desires. We must, therefore, consider the worker as an individual rather than as a member of a group. Otherwise, there will be little incentive for individual efficiency and, consequently, submergence of individuality into group consciousness. There is a distinct need in many organizations for an equitable plan of salary administration and promotion, that is, one which will facilitate the making of satisfactory and satisfying adjustments between men and their work.

Methods of Procedure. The making of satisfactory adjustments, however, is dependent upon our ascertaining the facts—that is, the facts about each class of positions in a given organization and the facts about each employee—and upon our utilization of these facts. This requires the development and operation of certain methods of procedure, which we may classify as follows:

1. Methods of analyzing work and establishing position standards.
2. Methods of evaluating the capacities and abilities of each individual employee.
3. Methods of making salary and promotional adjustments.

The first step in the development of a plan of salary administration is an analysis of the objectives of the organization as a whole, of each department, division, section, and smaller unit, and, finally, of each class of positions. The facts revealed by such an analysis should result in the establishment of specifications which will define the duties and responsibilities of each class of positions in the given institution. These specifications should enable the management to group the various classes of positions together into grades, arranged in an ascending order of relative importance and difficulty. When this has been done, it is practicable to work out salary standards in terms of the relative "value" of each grade of work.

The next step is an analysis of each employee's characteristics, in comparison with the relative degrees of abilities possessed by all of the other employees. The facts and opinions disclosed by this process should be recorded as specifically as possible and should be made known to the employee and to the management.

With the facts about the work on the one hand and the facts about the employee on the other, the management is in an excellent position to make satisfactory and satisfying adjustments between each employee and his work. The successful making of such salary and promotional adjustments cannot fail to increase the worker's satisfaction from his work, to decrease the expen-

diture of his energy in the accomplishment of his tasks, and to increase the amount, quality, and speed of his productive output.

It is the purpose of this article to discuss these three methods briefly, with special emphasis on the methods of analyzing work and establishing position standards, and also to discuss the line executive's part in salary administration.

METHODS OF ANALYZING WORK AND ESTABLISHING POSITION STANDARDS

For the purpose of our discussion, the methods of analyzing work and establishing position standards may be classified into the following three divisions:

1. Job analysis and the establishment of specifications for each class of positions.
2. The grading of each class of positions and the establishment of a class of positions.
3. The analysis of rates of compensation and the establishment of salary schedules.

Job Analysis and the Establishment of Class Specifications. Job analysis is the process of studying all of the available facts about any given task, position, department, or other unit. The analysis of the flow of work, methods of procedure, utilization of office equipment, and the like may be considered as phases of job analysis. If the results of such analysis are written up in standard form, we have at our disposal a device known as a "position specification." It is usually the practice to establish specifications for each class of positions rather than for each individual post or position. Such specifications may be expanded into various degrees of refinement, such as manuals of procedure, procedure charts, standard practice instructions, standards of output (i.e., quantity and quality), etc., depending upon the minuteness of the job analysis. There is a distinct tendency to develop the process of job analysis to a degree of quantitative refinement which will permit the establishment of salary and wage plans based upon the measurement of individual output.

The scope of the job analysis program to be undertaken by any organization should depend upon the purposes of such a program. The usual *objectives of job analysis* include one or more of the following:

1. The development or improvement of the plan of organization.
2. The development or improvement of methods of procedure, office machinery, equipment, forms, layout, etc.
3. The establishment of more accurate units for budgetary control and procedure.
4. The conservation of the health of the office worker.
5. The development of better methods for training office employees.
6. The establishment of standards which will facilitate the selection and placement of employees.
7. The establishment of standards which will facilitate the establishment of a grading plan for each class of positions and the development of a plan of salary administration and promotion.

A job analysis program which would include all of these objectives is seldom undertaken, due in part to the fact that many points of view would be required and that the expense of such research would require an appropriation which few managements would approve. It is our plan, therefore, to consider job analysis only from the viewpoint of the selection, placement, promotion, transfer, and compensation of employees.

One of the first questions to be considered, after the objectives of the job analysis program have been decided upon, is "*Who should make the analysis?*" It is usually possible to enlist the efforts of everyone affected by the program. For example, each individual employee may be instructed to outline the duties and responsibilities which have been assigned him, and his supervisor requested to verify and revise this information. The greater the cooperation of all concerned, the more comprehensive and accurate will be the data collected. It should be emphasized that the responsibility for job analysis is that of the supervisors, department heads and other executives. On the other hand, it is the function of the personnel staff to facilitate this process of analysis by consultation and conference with the executives and rank-and-file workers, and by editing the specifications in standard form.

Another important question is: "*How should the analysis be made?*" There are, of course, good and bad methods of job analysis. The use of questionnaires supplemented by interviews is an example of current practice. Such methods are excellent for the purpose of enlisting the cooperation of the supervisors and the rank-and-file employees. Figure 1 indicates a type of questionnaire which has been used successfully in office organizations. From the standpoint, however, of insuring accuracy, completeness, and uniformity in the development of specifications, it is desirable that the information obtained by the use of questionnaires and interviews be verified if possible by the objective observation of a trained research worker. The final specifications which are established should represent agreement between the employees, supervisors, and personnel staff as to the standards for each class of positions.

The actual preparation of a position specification may be illustrated by outlining the excellent technique which has been developed by the American Council on Education. According to this technique, the specification proper should be preceded by a "brief statement defining the general nature and location of the work." The detailed statements of the work itself, which follow, are called "objectives." The instructions for preparing a statement of these detailed objectives are reproduced in the Appendix of this article.

A specific example of the utilization of this technique in a large public utility company appears in Fig. 2 as a specification for the class of positions known as "equipment job order man" in that organization.

Up to this point the discussion of job analysis has dealt with the qualitative aspects of the analysis process. Qualitative job analysis must, of course, precede any attempts to quantify the various elements of any class of positions. But, if we are to make progress in the development of specific incentive plans which will supplement the basic salary incentive plan, it will be necessary to answer not only the question "What?" but also "How

Statement of Duties

Please read over the entire statement first, and then fill out, answering each question carefully and fully. Use additional sheets in case spaces provided for answers are insufficient.

Name.....
 Title.....
 Department.....
 Division.....

1. What is the customary title of your position?.....
 2. What is the location of your place of work?.....

(City)

(Bldg. or Street No.) (Room No.) (Telephone—Local No.)

3. Who is your immediate superior?..... (Name) (Title)
 4. How long have you been in your present position?..... With Company?.....
 5. If you are responsible for the direction or supervision of others, give their titles or occupations, the number of employees under each title, and (if space permits) give their names, at least the names of those who have any supervisory duties:

6. What are your regular working hours? From..... to.....
 with..... minutes off for lunch. Net hours per week.....

7. Do you give any time to work in any other position?.....
 8. List (1) all reports you prepare, and (2) all records you keep. Attach one sample of each, properly filled out with headings and typical entries.

9. Has a standard been assigned to you on the amount of work to be performed each day?.....
 If so, what is the amount?.....

10. Describe your work. Make your statement as detailed as space will permit. Put it in paragraph form, one paragraph for each principal kind of work under each heading. Mention by name and number of the forms and records used in the respective kinds of work. List your daily routine duties first and then list such additional duties as are performed weekly, monthly, on special occasions, or to fill in.

Use appropriate column for estimate of time normally spent on each kind of work.

Days per Mo.	Hrs. per Day	% of Total
--------------------	--------------------	------------------

Daily Routine Work:

Periodical Work (Done Regularly but not Daily):

Special and Fill-in Work:

11. When you took up your present duties, how were instructions given you regarding them? Were your duties definitely and clearly assigned? What training did you receive as to the best methods of performing your duties?

12. Are you taking educational courses or otherwise preparing yourself for advancement? If so, give particulars as to the methods followed and the position in mind.

Note: You are especially requested at this time, in addition to filling out this statement, to send in suggestions, under the provisions of the Suggestion System. Do not fail to submit any suggestions which you believe would make for efficiency and economy. Send them in on any subject, and especially on matters effecting your own position, in reference to one or more of the following:

- (a) Reassignment of duties:
 (b) Rearrangement of desks and other equipment:
 (c) Greater use of labor-saving appliances:
 (d) Savings in supplies:
 (e) Elimination of non-essential records:
 (f) Shortening of routines:
 (g) Cutting down the number of motions in actual work:
 (h) Reducing the number of absences:
 (i) Changes in policies:
 (j) Improvements in the work of others:

Signature of Employee..... Date..... 1929.

COMMENT BY IMMEDIATE SUPERIOR

Do the within statements correctly and completely describe this employee's work and place in the organization?..... If not, please make the necessary amendments below.

Approved Head of Department.....

Signature of Immediate Superior.....

(Title)

much?" In other words, we must *measure quantitatively* the various elements which have been qualitatively established by objective observation. A discussion of the technique of quantitative job analysis would be beyond the scope of this article. A specific example, however, of the establishment of

(This specification for the class of positions known as "Equipment Job Order Man" in a large public utility illustrates the use of the technique of job analysis which has been developed by the American Council on Education.)

Equipment Job Order Man

Prepare job orders for minor additions to and changes in central office equipment and large private branch exchanges.

Located in Equipment Plans force.

OBJECTIVES

Apply, when necessary, any knowledge or experience gained prior to entrance as a new employee.

Gather information in sketch and note form, from existing installations, or from records, for use in formulating plans.

Determine how any special construction and maintenance features of job are to be met.

Select the standard circuits and equipment best suited to the job.

Determine if there is need for special circuits or equipment.

Decide on proper arrangement of equipment on floor, switchboard, frames, racks, etc.

Conclude on best method of cabling and wiring.

Confer with superior on tentative plans for obtaining suggestions on his preliminary approval of them.

Direct draftsman in making working sketches and drawings of equipment, floor plans, cabling and circuits layouts.

Prepare lists of apparatus, cabling, circuits, drawings, etc., for job.

Estimate construction, removing, rearrangement, depreciation and salvage costs.

Prepare lists of job orders according to approved practices.

Edit requisitions for equipment needed.

Write letters covering subsequent modification of plans.

Answer questions of manufacturer or installer regarding proposed changes.

Cooperate with those engaged on power plans, if job has any power features.

Comply with Company regulations, as to hours, conduct, etc.

Read and study on the training subjects recommended for this assignment, as an aid to self-improvement.

Development proficiency in this work as a requirement for advancement to Specification Man.

FIG. 2.—Class specification.

quantitative specifications for the class of positions known as "Addressograph Operator" in a well-known office organization is shown as Fig. 3. This case is indicative of the application of quantitative job analysis to office

operations. On the basis of such measurement of individual output, it is possible to develop premium and bonus plans for certain classes of positions.

(This is an example of the use of quantitative job analysis in an office organization for the purpose of establishing quantitative specifications for the class of positions known as "Addressograph Operator." Reference: I. O. Royse—*Determination of Work Units for Office Machines*, 1927, American Management Association.)

Addressograph Operator—The cycle of work at the addressograph machines, model F-1, consists of seven elements:

- | | |
|---|--------------|
| 1. The operator receives the job ticket, material to address and a time ticket "rung in" | .33 minutes |
| 2. The plates specified are taken from the file..... | .75 minutes |
| 3. Plates are placed in the machine..... | .62 minutes |
| 4. The operator takes a working supply of the material to be addressed and places it face down on the left side of the machine table..... | .15 minutes |
| 5. The operator feeds the machine with left hand, material face down, and removes and turns it over with right hand. A foot lever is used to regulate the speed of the machine..... | 1200 per hr. |

Note: A helper inspects the work for defects.

If necessary it is immediately returned to the operator who adjusts machine and re-runs defective work, or helper makes the corrections by hand.

- | | |
|--|-------------|
| 6. If other trays of plates are to be used for the same job the operator returns used plates to the filing cabinet and repeats operations Nos. 2 and 3...65—about .001 per address plate | |
| 7. When the job is completed the time ticket is rung out..... | .30 minutes |

The unit finally determined is based upon element 5. Study of this element shows that 1,200 pieces per hour is a basic average on a straight run. It also shows that there is approximately one job change requiring two and one-half minutes to each 150 pieces addressed. In one hour six jobs of 150 can be completed. An allowance of 12 $\frac{2}{3}$ per cent is made on this operation reducing the expected output from 900 to 800 units per hour.

FIG. 3.—Quantitative class specification.

The Grading of Classes of Positions. A class grading plan represents the grouping into grades of the various classes of positions, arranged in an ascending order on the basis of relative importance, difficulty, and scope of activities. For the purposes of our discussion, let us assume that a "position" is a group of duties, responsibilities, or activities which are assignable to one individual, and that a "class" is a group of positions which are practically identical from the standpoint of duties. A "grade" would be a group of classes of positions which involve duties of approximately the same scope, importance, difficulty, and value without regard to the department or type

of work involved. The development of a class grading plan should not be confused with the setting of salary scales or with the rating of individual employees. A grading plan considers the classes of positions and not the incumbents of these positions.

The class grading plan provides a definite basis for the development of lines of promotion and for the establishment of salary standards. Without such a plan, we can seldom be certain that the adjustment of an employee from one position to another is not in the nature of (1) a demotion, which would be an injustice to him if the adjustment were intended to be a promotion or a transfer, or (2) a promotion, which would be an injustice to the other employees if the adjustment were intended to be a transfer or a demotion. In addition, it is practically impossible to eliminate departmental lines when a promotion is to be made unless a class grading plan has been established in advance. A grading plan is a prerequisite also to the development of a salary plan. In order that there be uniformity of compensation for the same grade of work throughout the company, it is necessary to determine definitely in advance the relative grade of each class of positions.

In developing a class grading plan, the following principles should provide a basis for the grading of each class of positions:

1. The scope of the duties and responsibilities of the positions of any given class, as indicated by the specifications and by comparison with others, should be the principal factor which determines its grade.
2. The education, experience, skill, etc., required of the incumbents of the positions of any given class constitute an auxiliary basis for determining its grade.
3. The skill, efficiency, compensation, etc., of the present incumbent of a position of any given class should have no bearing in determining its grade.
4. The simplest practical grouping of classes should be adopted which will serve the purposes of the grading plan.

The acid test of the effectiveness of any grading plan is whether it commends itself to the major executives, supervisory employees and rank-and-file workers. It is desirable, therefore, that all concerned participate in its development. The preparation of the first draft of the plan should be the responsibility of the personnel staff, working in close cooperation with the rank-and-file and the supervisory employees. The final grouping and arrangement of the various classes of positions should be worked out by a conference committee of executives, who have been appointed for this purpose by the chief executive. This final draft of the plan should represent the agreement of all concerned as to the relative importance of each class of positions.

There are various methods of actually determining the grades of any given class. The two which are most frequently used are the grade description method and the class rating method. Often both are used, the one as a check on the other.

The *grade-description method*, by utilizing the organization chart and the specifications, recognizes definite grades of work, which are first established and defined, the various classes of positions being then assigned to the proper grades by placing key positions first and making comparisons and inter-

(This is an example of the grade description method applied to a number of similar office organizations. Reference: M. A. Bills—A Method for Classifying Jobs and Rating Efficiency, Vol. I, *Journal of Personnel Research*.)

A. Including supervision over B, or highly technical work for which special training is necessary.

B. Supervisions of any C work or a large unit of lower grade work.

C. Operations requiring knowledge of the general principles of the business or some other general field and involving analytical thought.

1. Has a command and applies general rules or principles to cases not previously covered, or uses information which can be acquired only outside of Company, or persons who, through long experience with the Company, have acquired and are exercising knowledge of the general principles of business.

2. Same as 1, only handles more complicated cases.

D. Has complete charge of small unit of work in class E or a large unit of lower grade work, or assists in supervision under A of E grade work or lower.

E. Operations of classification, examination, review, compilation, of calculation, other than simple, involving complete and intensive knowledge of a restricted field.

1. Operations involving the intensive knowledge of a restricted field and the taking of action on cases not definitely covered previously or the making of other than simple calculations.
2. Checking, handling of papers where question has arisen and adjustment of difficulties in the above, making of special calculations, or performing of more complex E-1 operations, or conducting correspondence in a restricted field.

F. First grade supervision. Supervision of I, H, or G work in small groups.

G. Operations requiring identification and manual dexterity, and in addition assembling, combining or simple calculations (following a variety of rules, which are, however, very definite and specific).

1. Transcribing which involves work of above nature, or a variety of B work, or work requiring subsequent follow-up. Subject filing.
2. Checking or adjusting difficulties in the above work.

H. Simple operations requiring identification and manual dexterity. This requires the use of a few definite rules. It includes those jobs where only a regular and definite change is made in the material handled and in no case includes jobs where a large variety of rules must be understood and applied.

1. Simple filing or transcribing, or machine operations requiring no technical knowledge (such as addressograph).
2. Checking above work, responsibility for small unit of same, or doing above work without subsequent check.

I. Office boys, messenger service, simple clerical duties such as simplest sorting, etc., handling simple machines, such as letter press, etc. Major portion of time on messenger work.

FIG. 4.—Class grading plan.

polations. The effectiveness of this method is dependent upon the possibility in any given organization of preparing simple, distinct, and clear-cut generic

(This is an example of a simple rating scale which is used as one basis for determining the relative importance of each class of positions in an office organization. Reference: E. H. Little—*Some Considerations in Installing a Salary Administration Plan*, 1927, American Management Association.)

General Education—Maximum Points 6. The degree of general education, attained through school or individual study, necessary to give background for all-around performance in the position.

Special Training and Experience—Maximum Points 8. The amount of training in special courses, and experience in previous positions required by position in question.

Special Knowledge—Maximum Points 6. The amount of specialized knowledge of the functions of the department required to perform the work.

Accuracy and System—Maximum Points 6. The necessity for accuracy in copying, posting, checking or machine operation, and the need for system and neatness in performance of work.

Ability to Plan, Execute and Accept Responsibility—Maximum Points 8. The extent to which position requires the ability to plan for self or others, to carry out policies, and to be responsible for results.

Supervisory Ability—Maximum Points 4. The degree to which successful performance in the position requires the ability to direct others and to obtain their cooperation for the attainment of results.

Judgment—Maximum Points 6. The degree to which position requires the exercise of discriminating judgment, and the ability to arrive at logical conclusions.

Mental Ability—Maximum Points 3. The mental alertness necessary to sense the significance of facts and situations, or to grasp and remember a multitude of details.

Ability to Make Good Contacts—Maximum Points 4. The extent to which position requires a personality which can make a prepossessing impression for the department or the company.

Integrity and Professional Ethics—Maximum Points 4. Degree to which position requires a person whose integrity has been proved, and whose discretion regarding people and things can be depended upon.

FIG. 5.—Scale for rating classes of positions.

definitions of the various grades. In Fig. 4 is reproduced a class grading plan which resulted from the utilization of the grade description method.

The *method of rating classes of positions* is based upon the use of a rating scale which consists of the more important of the factors which differentiate the higher from the lower grade classes. Some scales provide for an elaborate series of factors and weights by means of which an index number is obtained for each class of positions rated. On the basis of this index number, a given class is assigned to a definite grade. The success of any scale, however, is dependent upon the value of the opinions of the individuals who are doing the rating rather than upon the scale itself. Increasing the complexity and numeration of a rating scale does not in any way increase its reliability, objectivity, and validity. A simple scale is probably the more workable. An example of a scale for rating classes of positions is shown as Fig. 5.

A third method of *grading classes* which has not been used as extensively as the other two is the *grade progression* method, by which, starting with what are obviously the least difficult and important classes, like classes of positions are considered one by one and are grouped together into grades as they (the classes) increase in difficulty, importance, and relative value, until the classes of the highest quality have been reached. The grading plan which resulted from the application of this method in one organization appears as Fig. 6.

Grades are real and fundamental distinctions, but whether these or other distinctions are used in the final grading plan which is established is, of course, an arbitrary matter. Nevertheless, if a class grading plan has been worked out carefully, and accepted by those who either use it or are affected by it, it will be found indispensable in the development of a plan of salary administration and promotion.

The Establishment of Salary Schedules. The working out of equitable salary schedules is, of course, the most difficult problem which must be solved in the development of a plan of salary administration having as its principal objective the satisfaction of the worker's desires. No practical remedy has as yet been suggested for the dissatisfaction arising from the unequal distribution of the world's economic goods. Nor have any of the social sciences advanced any acceptable theory as to what should be an equitable and ethical division of the earnings of a given business organization. At the present time, therefore, the most practical policy seems to be to compensate the employee in proportion to his contribution to the production of the goods or services created by his company.

The application of such a policy involves a determination of the relative value of the class of positions to which he is assigned and an evaluation of his relative worth at any given time in his position. The determination of the relative value of each class of positions is, of course, the problem of developing a class grading plan. This has been discussed in the previous section of this article. The problem of evaluating the employee's relative worth, however, will be discussed later.

After the relative value of each class of positions has been determined, we are in a position to establish definite schedules of pay for each grade of work.

A plan of salary administration assumes that the basic rates of pay should be uniform for the same grade of work throughout an organization. The

CLASS GRADING PLAN

CLASS GRADING PLAN																
DEPARTMENT	APPRAISED	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV
ACCOUNTING			General Clerk Jr			File Clerk Jr Invoice Clerk Payroll Clerk Jr Typist Jr	Comptroller Per Ops Jr Mach Op Treasurer Clerk Jr Typist Jr	Analysis Clerk Jr Mach Op Per Ops Jr Stenographer Clerk Jr Mach Op Per Ops Jr	Correspondence Clerk Jr Mach Op Per Ops Jr Stenographer Clerk Jr Mach Op Per Ops Jr	Bookkeeping Clerk Jr Mach Op Per Ops Jr Stenographer Clerk Jr Mach Op Per Ops Jr	Analysis Clerk Jr Mach Op Per Ops Jr Stenographer Clerk Jr Mach Op Per Ops Jr	Super/Temp Sub Sect Supt. Sec'y Supt. Sec'y Supt. Sec'y Supt. Sec'y Supt. Sec'y Supt. Sec'y	Accountant Chief Rep. Chief Rep. Chief Rep. Chief Rep. Chief Rep. Chief Rep. Chief Rep.	Chief Cash Chief Cash Chief Cash Chief Cash Chief Cash Chief Cash Chief Cash Chief Cash	Chief/Report Div.	
		Office Boy	Messenger	File Clerk Jr General Clerk Jr Verifying Clerk Jr Typist Jr		Adjustment Clerk Jr Mach Op Per Ops Jr Typist Jr	Registered Mail Clerk Mach Op Per Ops Jr Typist Jr	Control Clerk Jr Mach Op Per Ops Jr Typist Jr	Adjustment Clerk Jr Mach Op Per Ops Jr Typist Jr	Bookkeeping Clerk Jr Mach Op Per Ops Jr Typist Jr	Collection Clerk Jr Mach Op Per Ops Jr Typist Jr	Asst Cashier Mach Op Per Ops Jr Typist Jr	Asst Cashier Mach Op Per Ops Jr Typist Jr	Chief Cash Chief Cash Chief Cash Chief Cash Chief Cash Chief Cash Chief Cash Chief Cash	Chief/Report Div.	
CASHIERS																
COMMISSION	Security Analyst	Office Boy	General Clerk Jr	File Clerk Jr General Clerk Jr Verifying Clerk Jr Typist Jr	Control Clerk Jr Mach Op Per Ops Jr Typist Jr	Band Number Clerk Jr Mach Op Per Ops Jr Typist Jr	Band Number Clerk Jr Mach Op Per Ops Jr Typist Jr	Band Number Clerk Jr Mach Op Per Ops Jr Typist Jr	Band Number Clerk Jr Mach Op Per Ops Jr Typist Jr	Report Clerk Jr Mach Op Per Ops Jr Typist Jr	DB Clerk Jr Mach Op Per Ops Jr Typist Jr	Bookkeeping Clerk Jr Mach Op Per Ops Jr Typist Jr	Bookkeeping Clerk Jr Mach Op Per Ops Jr Typist Jr	Chief Cash Chief Cash Chief Cash Chief Cash Chief Cash Chief Cash Chief Cash Chief Cash	Chief/Report Div.	
OFFICE AUDITING			General Clerk Jr	Typist Jr		Audit Clerk	Apprentice Auditor				Office Audit Clerk Jr			Office Audit Clerk Jr		Supervisor Auditor

current trend in salary practice, therefore, is to establish definite minimum and maximum rates of pay for each grade of work and to indicate intermediate step rates between the minimum and maximum. In establishing such minima and maxima, there is usually overlapping, inasmuch as it is assumed that an experienced man in one grade is worth more than a beginner in a position in a higher grade. The differentials between the minima

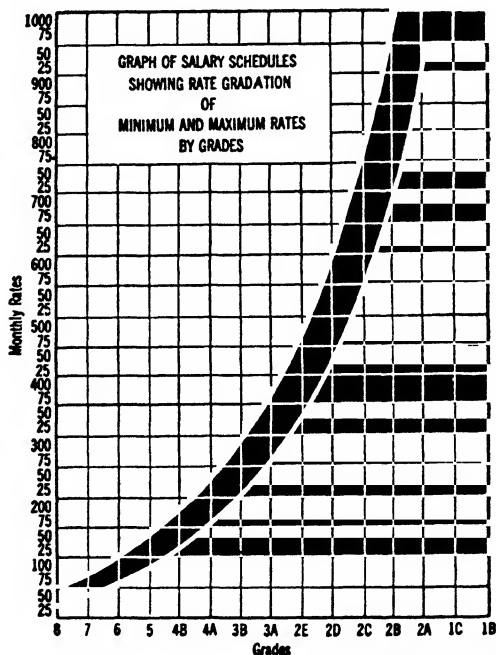


FIG. 7.—A graphic presentation of minimum and maximum salary rate gradations by grades.

and maxima increase with the increase in grade. In addition, the increments of increase between the maxima of successive grades and between the minima should be proportional to the increase in grade. The working out of salary schedules in conformance with these principles may be adapted to meet the conditions within any organization or community. Current so-called "market rates" for certain classes of positions will influence the determination of some of the minimum rates. Interchange of information on salaries between companies will also be of help, although such information is of little value without definite specifications for the class of positions being investigated.

The salary schedules may be represented by a graph, consisting of two curves (minima and maxima) of constantly increasing slope. Examples of the use of such graphs are reproduced in Figs. 7 and 8. In the first case, the salary rates are plotted along the vertical axis and the grades along the horizontal. The salary range for any given grade would be the increment between the points of intersection of the two curves and the vertical line which represents that grade. In the second case, semilogarithmic paper is used, the salary rates being plotted along the log scale. By plotting the maxima and

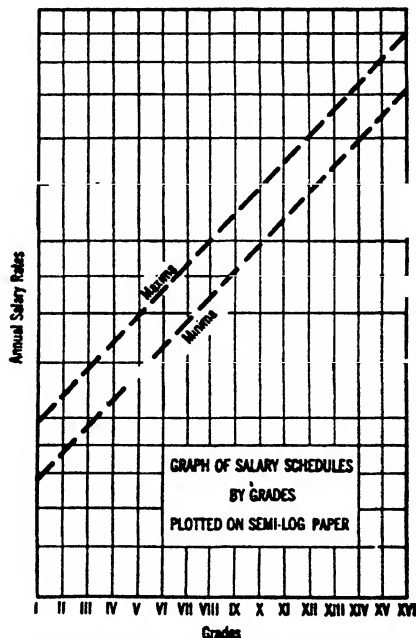


FIG. 8.—By plotting the maxima and minima as straight lines on a logarithmic scale, a constant even percentage increase in slope is obtained.

minima as straight lines an even percentage increase in slope is obtained.

The actual construction of a salary schedule table is illustrated by the example shown as Fig. 9.

If quantitative work standards have been prepared for any given class of positions, it is possible to augment the salary schedules by the development of a premium or bonus plan for that class. We must keep in mind, however, that these specific incentive plans apply to specific classes of positions rather than to the working force as a cohesive unit. They undoubtedly possess merit and tend to increase the worker's production. But they cannot be

(An example of salary schedule table constructed to show the relative values of different grades of work. The figures are arbitrary, here, and not based upon any particular organization. Reference: J. O. Hopwood.)

GRADES	Primary Grade	Sub-Grade	Scales of Rates—Serially Arranged—(Read Crosswise—Monthly Basis—Par Values—to serve as a basis for comparison and adjustment of salary and wage rates.					
			Minimum		Maximum		Average Rate Increase	
I. Management								
1. General Management	1	A	2500	3000	3500	4000	4500	500.00
		B	1700	1975	2250	2525	2800	275.00
		C	1250	1400	1550	1700	1850	150.00
2. Department and association Management	2	A	975	1065	1155	1250	1350	93.75
		B	750	815	880	950	1025	68.75
		C	600	650	700	750	800	50.00
		D	475	515	555	595	635	40.00
		E	375	405	435	465	500	31.25
II. Operating Practice								
3. Supervision or Highly Technical Service	3	A	300	325	350	375	400	25.00
		B	240	260	280	300	325	21.25
4. Highly Skilled Service or Minor Supervision	4	A	190	205	220	240	260	17.50
		B	150	165	180	195	210	15.00
5. Skilled Service	5		110	120	130	145	160	12.50
6. Semi-skilled Service	6		80	90	100	110	125	11.25
7. Slightly Skilled Service	7		50	60	70	80	90	10.00
8. Junior Service, Service in Elementary Training and Manual Service of Lowest Grade	8		35	40	50	60	70	8.75

* NOTE: These figures simply constitute a mathematical table. They do not represent rates for any particular organization.

applied at the present time to all classes of positions in any given organization. What is needed is a more comprehensive and basic compensation plan which will appeal to each individual employee. Such a plan should be in operation before specific incentive plans are developed for specific classes of positions.

METHODS OF EVALUATING THE CAPACITIES AND ABILITIES OF EACH INDIVIDUAL EMPLOYEE

We have discussed in some detail the methods of analyzing work and establishing position standards. The next step is to consider the methods of evaluating the capacities and abilities of each employee. In order that adjustments be made intelligently, it is necessary not only to have the facts about each position but also to have the facts about each employee. With these two sets of facts in hand, we are in a position to make adjustments between the employee and his work.

The principal methods now in use for evaluating employee characteristics include:

1. Periodic and special interviews.
2. Psychological and educational tests.
3. Ratings.
4. Attendance and punctuality records.
5. Medical records.
6. The personal history blank.
7. Reports and recommendations of superiors.

It is not within the scope of this article to discuss these methods inasmuch as they have been adequately discussed elsewhere. Mention might be made, however, of the desirability of posting to a central qualification record for each employee the information obtained by the above and other methods. The central qualification card, on the one hand, which gives a cross-section of the employee's characteristics, and the class specification, on the other hand, which gives a cross-section of the content of the position, together constitute the facts necessary for the making of adjustments.

It should be mentioned, also, that some form of a position record will be of great assistance. Such a record should show at any given time: (1) the present positions, arranged according to the plan of organization; (2) the grade and salary range for each position; (3) the present incumbent of each position; (4) the present salary of each of these incumbents.

METHODS OF MAKING ADJUSTMENTS

The principal adjustments which are made between men and their work are (1) salary adjustments and (2) promotional adjustments. The practices which have been followed in a large office organization in each of these two types of adjustments will be presented here because they illustrate the effective utilization of the various standards which have been discussed previously. In this company, it is the responsibility of the employment division of the personnel department to assist the line executives by facilitating:

1. Salary adjustments, which will recognize the relative worth of an employee within a given position.

2 Promotional adjustments, which will continuously and satisfactorily utilize the abilities and capacities and satisfy the interests of an employee.

Salary Adjustments. The making of salary adjustments will be considered under the following three headings:

1. Adjustment of the entrance salary.
2. Adjustment within the limits of the position for:
 - a. The average employee.
 - b. The exceptional employee.
 - c. The below average employee.
 - d. The employee receiving the maximum salary rate for his position.
3. Adjustment at promotion.

Adjustment of the Entrance Salary. The agreement with the applicant under consideration as to a fair and acceptable entrance salary is the first salary problem to be faced. Before attempting to fill a position the employment division will ascertain from the class grading plan and the salary schedules the grade of the position and the entrance and maximum salary rates. Next, it will consult the class specification for a description of the duties to be performed. A new employee enters at the minimum salary. Bargaining with the applicant is thus avoided. All of the available facts regarding the position are laid before him, including an explanation of how the salary rates have been arrived at. If an employment division has made a judicious selection, and the applicant is qualified, but not over qualified, for the duties and responsibilities of the position, the salary offered should, and usually does, appeal to him as a fair starting wage.

Adjustment within the Limit of the Position. The second problem is the making of salary adjustments within the salary limits of the position.

a. *The Average Employee.* It is the policy under the plan of salary administration normally to make adjustments on the anniversary of the employee's employment. The procedure is as follows:

The employment division notifies the department heads each month of the employees whose anniversaries occur during that month. A check-sized form, known as the salary adjustment review, is prepared for each employee who is to be considered and is forwarded to the department head. This form supplies the department head with data relative to the grade, salary limits, and step rates of the position, and the date and amount of the last three salary adjustments of the incumbent, and it provides a space for his recommendation. The department head recommends an increase, normally to the next step rate, or he indicates that he does not believe an adjustment is desirable. He then returns the form to the personnel department for review. The employment division, from the various records at its disposal, reaches a conclusion regarding the desirability of the proposed increase. These records include complete data of the employee's history with the company, his recent salary adjustments, his periodic ratings by the department head, and his educational activities. If the employment division is in concurrence with the department head, the form is routed through the budgetary procedure to the pay-roll division. On the other hand, if the employment division does not agree with the department head's recommendation, the problem is discussed with the latter until agreement or intelligent disagree-

ment is reached. If agreement is not reached, the problem is referred to the chief executive. This latter condition, however, seldom occurs. It should be emphasized that, although authority of approving these recommendations has been delegated to the employment division, authority for disapproval is retained by the chief executive.

The procedure outlined above covers the average case and it is believed that it will adequately recognize the progress of the majority of employees. It is, however, flexible in its application.

b. The Exceptional Employee. The department head uses discretion, of course, in recognizing individual differences. The amount of salary received by any employee within the limits of a position is governed by his relative efficiency in performing the work. The department head rewards unusual ability by recommending special adjustment at any time the employee's performance and progress have proved exceptional. When the department head wishes to recommend a special adjustment he requests the employment division to send him a salary adjustment review form. Otherwise the procedure is the same.

c. The Below-average Employee. On the other hand, no adjustment on the anniversary is made for the employee whose progress has not been satisfactory. The occasion offers the department head or supervisor an excellent opportunity to discuss frankly with the employee his unsatisfactory progress.

d. The Employee Receiving the Maximum Salary Rate for His Position. No adjustment is made above the maximum salary established for the position. In cases where an employee has reached this maximum salary, a memorandum reminding the department head of this fact is sent out by the employment division instead of the usual salary-adjustment review form. This letter requests the department head's recommendations as to what, if any, promotional or other adjustments he deems advisable. The letter also requests that he explain the situation fully and frankly to the employee. At this time also the employee is usually called to the employment division for an interview. He is told frankly that his promotion depends: first, on the frequency of openings in higher grades and second, on his ability to qualify himself for these positions in competition with other employees. If, in the opinion of the department head and the employment division, the employee has reached the limit of his capabilities, he is so advised. It is sympathetically pointed out to him that it is his problem to decide whether he wishes to remain in his present status or whether his opportunities for promotion would be better with some other organization.

Adjustment at Promotion. When making promotions it is the policy to adjust the employee's salary to the minimum rate established for the new position. In cases where the salary of the individual promoted is already at or above the minimum salary of the new position it is usual to make an adjustment to the next step rate. There are exceptions, however, to this policy. In cases where the employee who is being promoted has received a salary increase within two or three months prior to the time of promotion, further adjustment is usually not made immediately. There is also the special case of an employee who is not thoroughly qualified for the new position at the time he is promoted, but who promises to qualify rapidly as

soon as he is in the position. His salary is brought up to the established minimum by adjustments made during the first six, eight, or twelve months in the new position.

Promotional Adjustments. Continuous adjustment of the changing interests and capacities of the employee is dependent upon the machinery of an adequate promotional plan.

It is the policy of the company to fill all vacancies by promotion from within the organization whenever a qualified candidate can be found and to promote the best qualified individual regardless of whether he is in the particular department in which the vacancy occurs or in some other.

1. *Establishing the Grade of the Position to Be Filled.* The employment division is notified by a requisition form whenever a replacement is to be made or an addition to the force is needed. If a new position is to be created, the requisition is referred to the personnel research division for the purpose of analyzing the duties to be performed and tentatively grading the position. On the other hand, if the position to be filled has been previously established, its grading is ascertained by comparing the requisition with the class grading plan and its content by consulting the existing class specifications.

2. *Selection of the Candidate.* The first step in selecting a candidate for promotion is a careful consideration of all employees in the organization who may possess the necessary qualifications. The names of incumbents, irrespective of department, in positions a grade or two below that in which the vacancy exists are secured from the tabulating card records maintained by the records section of the employment division. It is then the problem of the employment division to select the best qualified person from this list. Various records are consulted in order to reach a decision as to the qualifications of the candidates. Chief among these is the centralized qualification record containing the employee's photograph and giving his age, marital status, past and present educational activities, previous employment record, history with the organization, and abstracts of all notes made during periodic interviews. The employee's folder containing his original application and his periodic ratings by department heads is also consulted. When this has been accomplished some of the names on the list will be automatically eliminated because of lack of special training or because of interests in other directions.

An employee who is receiving the maximum salary of his present position receives very careful consideration, but he is never recommended for promotion unless he is as well qualified as any other candidate.

Before the selection is made, it may be advisable to interview the line supervisory staff and the employee under consideration without necessarily divulging the purpose of the interview to the latter.

3. *Securing the Agreement of the Department Manager.* In many cases the candidate will be located in the department in which the vacancy has occurred, and it is necessary only for that department head and the employee to be agreeable to the change. On the other hand, in cases where the promotion is interdepartmental, it is necessary first to obtain the agreement of the head of the department in which the employee has been working. When and if this has been obtained, the approval of the prospective department head

and of the employee himself follows. If the employee does not desire this particular promotion for himself, it is not made. The same procedure is followed in filling the vacancy created by the promotion and, again, in filling the vacancy created by the second promotion, and so on, down through the different grades. If these chain promotions can be filled from within the organization, the new employee to be secured from the outside should enter in grade I. If a time-honored saying may be indulged in, it may be said that when the president dies a new office boy should be hired.

In many instances, when openings have occurred in the higher grades, half a dozen or more people have been advanced, each receiving an increase in salary, and yet the net pay roll cost to the organization has been decreased.

It should be mentioned that the employment division has found it exceedingly difficult to effect interdepartmental promotions during periods when, due to reorganization of old or the installation of new departments, the class grading plan temporarily has not been up-to-date. On such occasions, it has often been impossible to establish definitely that an apparently desirable move would actually result in an advancement in grade for the employee. Unless a department head can be assured that a transfer of a desirable employee will offer greater immediate and ultimate salary opportunities than he can offer, he is quite naturally unwilling to lose a valuable man.

THE RESPONSIBILITY OF THE LINE EXECUTIVE IN SALARY ADMINISTRATION

The successful application of a plan of salary administration and promotion will depend in no small part upon the appreciation of its value by the line executives and supervisory employees. It is essential, therefore, that they be trained by means of various training devices in the use of class specifications, the class grading plan, salary schedules, methods of evaluating the qualifications and progress of employees, and methods of making adjustments. Also, they should be trained in the specific difficulties of supervision as regards the making of salary and promotional adjustments. Two of the more important of these difficulties, namely, the interpretation of salary policies and decisions and the maintenance of a frank relationship with subordinates on salary matters will be discussed below.

Interpreting Salary Policies and Decisions. It is the responsibility of the executive to interpret properly to his subordinates the salary policies and decisions of his superiors. Unfortunately, this responsibility is not always accepted by him. We are all familiar, for example, with the case of the foreman who complains to his men that he would like to raise their wage rates but that the management will not let him, or with the case of the clerical supervisor who tells one of his clerks that the latter is worthy of a salary adjustment but that the management refuses to allow it. In other words, such executives lose sight of the fact that they were appointed to their positions by the management and not elected by their subordinates. They "sell" themselves to their subordinates at the expense of "unselling" the management. They attract a false personal loyalty to themselves, at

the same time developing a disloyal attitude on the part of the employees toward the organization. Such practices obviously undermine organization structure and break down morale.

If the management of an organization promotes or appoints an individual to an executive or supervisory position, he becomes a representative of management and should assume full responsibility for all management decisions on salary matters. This does not mean that the subexecutive should suppress his own honest convictions; it implies that, when his superiors do not concur in his recommendations, it is his obligation to present his difference of opinion to the management—who will usually explain their decisions—rather than to his subordinates, whose experience and judgment in most cases would not equip them to form a sagacious opinion. Confidence that there is a sound reason for every decision on salary matters made by the management should be the basis of his concurrence in decisions the reasons for which are not apparent. It is his privilege, of course, to ask for explanations, but where his limitations of experience will not enable him to appreciate the management's decisions, it is his obligation, as an appointee and representative of the management, cheerfully and confidently to acquiesce.

If he is a foreman, he should explain carefully to his workers the reasons for the wage rates and should indicate his full agreement with these standards. If he does not agree in all cases, he should take steps through proper channels to recommend changes in rates to the management, but he should not under any circumstances indicate to his subordinates that he is not in full agreement with the existing standards. If he is directing the work of salaried employees, he should make sure that each subordinate understands the basis of his individual salary rate, namely, the value of his position to the organization, and the recommendation of his superior in accordance with his individual performance on the job. The subordinate should realize that his present rate of pay is the reflection of his chief's appraisal of the value of his position and of his progress in this position.

To be specific, let us assume that you, the reader, are an executive and that one of your subordinates approaches you with a request for a raise in salary. Just how should you proceed? The following is suggested:

1. Tell your subordinate that you will be very glad to discuss his salary problem with him and invite him to present his views on the subject. Listen to him sympathetically, and then tell him that you will give the matter careful consideration and will let him know your decision in a day or so. Do not state that you will try to get a raise for him or that you will see what can be done about it. Simply agree to review the matter.

2. If you feel he is not entitled to a salary adjustment, interview him as soon as possible and so advise him frankly, giving him your reasons. Do not delay advising him and do not evade a frank statement of your opinions. Also, do not under any circumstances follow the familiar line of least resistance and recommend an adjustment when you know that it is not merited; such action is an expression of moral cowardice, betraying the interests of the organization and distorting the position of the employee. Do not pass the responsibility for the decision on to any one else, but bear in mind, nevertheless, that the subordinate has the right of appeal to your chief without fear of prejudicing you.

3. If you conscientiously believe that a salary adjustment should be made, make your recommendations through proper channels, but do not as yet indicate to your subordinate what your decision is.

4. If your recommendation is approved, interview your subordinate as soon as possible and advise him just what adjustment you are making and why you are making it. Do not let him first discover the adjustment in his next payroll envelope.

5. On the other hand, if your recommendation is not approved, interview your subordinate and tell him that, after careful consideration, you believe that no adjustments should be made at this time. Take full responsibility for the final decision and do not fail to support the management's point-of-view. Only the timid and cowardly executive will avoid this full responsibility.

Relationships with Subordinates on Salary Matters. It is also the responsibility of the line executive to maintain a frank "open-book" relationship with each subordinate as regards the latter's progress, salary, and chances of promotion. Although it is generally agreed that such a relationship is the only one satisfactory in the long run, executives frequently lack the courage to maintain it. We are all familiar with the case of the subordinate who, when notified that his services are unsatisfactory and that they will no longer be required after a certain date, is painfully surprised and complains that his chief had only a few weeks before told him that his work was satisfactory, this executive being the man who now requests the separation.

We are familiar, also, with the problem of the mediocre employee who is allowed to tag along year after year, being recommended now and then for transfer, for promotion, and for salary adjustment, but never for removal, simply because some executive has been a moral coward. This soft-hearted and probably well-meaning executive does far more harm than good, creating in the mind of the subordinate a false impression of his own usefulness and, through postponing the necessity for his vocational readjustment, may delay until it is extremely difficult or impossible for the misfit to realign himself. The injustice is by no means one sided, for the management also suffers. Years afterwards the organization discovers that there is a misfit on its hands, that the relationship between this employee and his work is neither satisfactory nor satisfying, and that his salary is considerably out of proportion with the value of the work. If an attempt is then made to separate this hapless individual, the act is condemned as inhuman and unjust.

Such situations can be avoided by any executive who will deal with his subordinates on a frank basis, keeping in mind that most people appreciate a candid, constructive discussion of even their faults. To be more specific, assume again that you, the reader of this article, are an executive supervising the work of six or seven subordinates. How can you maintain a frank, open-book relationship with them? The following suggestions are offered:

1. Interview each subordinate periodically, say three or four times a year, and tell him frankly just where he stands, what progress he has made during the last few months, why his rate of pay is what it is, what mistakes he has made and how he can avoid them in the future, and what his shortcomings are. Do not hold anything back. Let him know how he compares with each of his associates. If he has the ability to qualify for a higher grade job,

point out the opportunities for promotion and tell him how he can make himself worthy of them. But, if he has reached the limit of his possibilities, or if he is incompetent, tell him so without reservation; do not under any circumstances evade this responsibility.

2. Make certain that each of your subordinates knows that he can at any time discuss with you any problem, particularly such as a request for salary adjustment or a complaint. Encourage him to state his opinions and grievances without reservation at all times and make him feel that his position will in no way be jeopardized if he criticizes your decisions. This opportunity for the presentation of complaints should always be open. Do not delay taking action on such matters whenever they are presented.

These suggestions, of course, are not offered as a patent remedy for all salary difficulties between an executive and his subordinates. They will not be of much help if the salary and promotion plan is not sound. On the other hand, if a valid plan has been established and if each executive will interpret this plan as his own and will maintain a frank relationship with his subordinates at all times on salary matters and progress status, much will have been done in the promotion of efficiency and happiness throughout the organization.

APPENDIX

Technique of Writing Class Specifications

(The following instructions for the preparation of specifications for any class of positions are reproduced below with the permission of The American Council on Education, 26 Jackson Place, Washington, D. C.)

These instructions are designed to show how the items of the specification can be developed and listed in a simple step-by-step manner. It will not be necessary to follow these steps in the exact order in which they are presented. The idea of being so explicit is to give a clear understanding of just what the items should contain to develop a good specification.

While the gathering of facts and moulding them into specification form is not to be done by the usual questionnaire method, self-questioning is recommended as an excellent means of accomplishing the desired results.

1. **The Things to Be Done.** Form the list of your specifications by continually asking the question "What do I do?" Then jot down on plain paper all the different things you do in two-word items, just as they occur to you. For instance:

File Contracts

2. **Essential Things.** A specification according to the definition should show the *essential things* done. Essential things are those you would naturally refer to in discussing your work with your employer or a fellow employee engaged in the same line of work. You know that they are familiar with the unimportant features of your work and you would not mention them. Now revise your list. Pick out and retain the essential items, and discard those which are unimportant. The objectives retained in the list must be essential

ones whether they be main or contributing. Only those which are plainly unimportant should be deleted. For instance:

Open file
Select index
File contracts
Close file

This listing includes some items of little or no importance.

File contracts is the essential thing done. Omit the others as unimportant.

3. Denote Action. Before going further it would be well to recall that it is the objectives of your position that you are listing. An objective requires action on your part in order that ultimately it might be accomplished. Therefore, the items of the specification should denote *action*. The proper method of doing this is by always beginning each item with a word which denotes the act of accomplishing an objective. For instance:

FILE Contracts

At this point a word of caution against beginning the item with a word denoting other than the act of accomplishing an objective is advisable. In order to make this clear let us say that you have been in your present assignment a relatively short time and have not as yet become familiar with all of its requirements. In that case you may be doing some of your work in an inexperienced manner; you may be practicing to do certain things still too difficult for you to accomplish satisfactorily or there may be other things you have not yet undertaken. If such is the case list all of the things you know of and denote action as though you are now doing them regardless of how well you are doing them, how hard you are trying to do them or how able you are to do them. Therefore you are to avoid beginning your items with words implying indirect action. For instance:

Good form
File contracts

Poor form
Endeavor to file contracts

4. Kinds of Things. The next step is to run over the items and enlarge each one into a three-word item by asking a second question—"What kind." That is "What *kind* of contracts." The result probably will be:

File Building contracts

5. Developing the Items. While the three-word items thus far developed are the foundation of the specifications they are in most cases too meager for practical use. Even one who is familiar with your work might be in doubt regarding the real meaning of some of the items. They should be expanded therefore with the idea of making them more descriptive or having them indicate any unusual or important features which are likely to be overlooked.

Proceed to develop the three-word items by continuing to ask questions of yourself. Inquire as to what descriptive information it would be well to add to each item to indicate any important or unusual features of the principal elements of the position, as follows:

a. Purpose. What is the purpose of this objective? Indicate purpose, thus:

Total ledger accounts *preparatory to balancing*.

b. Worker. What unusual or important qualification of the worker is necessary in the fulfillment of this item? Indicate qualification thus:

Give frequently requested numbers *from memory*.

c. Tool. What unusual, important, scientific, power- or labor-saving tool is used? Indicate tool, thus:

Prepare *adding machine* totals of payments.

d. Process. What next step does the accomplishing of this item lead to? Indicate process, thus:

Give *verbal report* immediately upon receipt of payments.

e. Production. Is a separate and distinct unit of work accomplished through this objective? Indicate unit, thus:

Sort *bill stubs* in numerical order.

f. Location. What is outstanding about the worker's location in achieving this objective? Indicate location, thus:

Secure new subscribers by *house to house* visits.

g. Other Individuals. Who will benefit by completing this item? Indicate other individuals, thus:

Make up monthly summaries for *bookkeeper*.

6. Correct Names. The use of incorrect names is often the root of misunderstanding or serious error. Go over each item of your specification and see that all materials, tools, operations, etc., have been referred to by their correct names. Examples of correct and incorrect names are:

Correct	Incorrect
Service order	Line order

7. Complete List. A complete list of objectives is important. Be sure you have all the *main* objectives and it will be comparatively easy to add the associated contributing objectives.

A further aid in developing a complete list is to take at least one month to complete the writing of your original specification. In this way you will be reminded by your work to list not only the things you are doing day after day but also those things you do once a week, once a month and occasionally during a longer period.

Speak with your fellow employees who are doing the same kind of work as you are. They probably will be able to suggest some items which you might otherwise overlook.

It may be that you have not been in your present assignment long enough to have become fully familiar with all of its features. If such is the case you are not in a position to make a complete list. Proceed by listing all the items of your work you have experienced thus far and request your immediate superior to supply those you have not yet encountered. In listing the things which you will be required to do later in your present assignment

you are reminded to denote action in wording the items, as though you were now doing the work.

8. Order of Listing. You have discovered in writing your specification thus far, that you have quite a number of objectives you are seeking to accomplish through your daily work. It was suggested earlier that you jot down the items just as they occur to you but it is highly desirable that they appear in the finished specification in some logical order. Proceed by first determining which items represent the *main* objectives. Then group the remaining items under each of these as your *essential contributing* objectives. Arrange the groups according to their relative importance, sequence of performance, or as directed. List the individual items of each group in a step-by-step order just as you do them in your work.

CHAPTER V

MEASUREMENT OF OFFICE OUTPUT

UNITS OF MEASUREMENT FOR OFFICE WORK

BY WALLACE CLARK, *Wallace Clark and Company*

Importance of Standards of Output. The purpose of measurement in offices is to get work done. Work must be expressed in measured quantities in order to know at any time how much has been done and how much remains to be done and it is upon this knowledge of the volume of work that the plans of the management for getting it done are mainly based.

Modern management has found that the most effective means of getting work done is to establish standards of output and to compare actual production with those standards.

There are several reasons for doing this:

1. In order to find out what office activities are moving too slowly or too fast, so that the causes may be investigated and the obstacles removed or the plans revised.

2. In order to provide a basis for payment by results. It is only a matter of fairness to pay high wages to those who do more than the average amount of work and this is not possible unless there is an accurate method of measuring the quantity of work done.

3. In order to judge the progress made by an individual or group by comparing current output with past records. Promotion depends primarily on progress and quantitative records provide a more dependable basis for judgment than general impressions.

4. In order to compare individuals with others or with a group to find out which ones are in need of training or instruction or possibly of being transferred to types of work for which they are better fitted.

When actual production of work is compared with standards for these four and other reasons, the result is a reduction in the cost of the work.

Quality Standards. Before the measuring and recording of any kind of office work is attempted it is necessary to establish quality standards and to provide for maintaining them. If such provision is not made, any attempt to increase the quantity of output will almost invariably result in the lowering of its quality.

The quality of office work is indicated in two ways: (1) accuracy; (2) appearance.

1. Errors can be measured and expressed in quantities and therefore definite standards of accuracy can be developed. Departures from these

standards are expressed in numbers of errors. These standards differ according to the policy of the company and according to the nature of the work. For instance, in preparing invoices to customers, the standard is absolute accuracy, but in securing monthly balances of controlling accounts, errors in cents are usually disregarded and in some companies, if differences do not amount to more than \$10.00, \$20.00 or \$50.00, the accuracy is considered satisfactory.

The important thing is to have the standard of accuracy definitely determined, written down, and clearly understood by those who are doing the work.

2. The appearance of work, that is, its neatness, legibility, etc. can seldom be measured and the standards are therefore expressed in written instructions, which are made as clear and definite as possible. The inspection of work and its comparison with these *standards of appearance* is therefore done by the application of trained judgment rather than by measurement.

As an example of the application of quality standards, we may take a letter which has been transcribed by a stenographer. It is inspected, possibly by the head stenographer, and its accuracy is measured by the number of errors in recording the words of the dictator, in grammar, in spelling, or in typing. Its general appearance, however, cannot be measured and the inspector applies her trained judgment, deciding that the letter either is or is not up to the quality standard which has been decided upon. She also decides what must be done to bring it up to the company's standard of appearance.

In manufacturing plants the responsibility for quality is not usually placed upon the line executive, but a separate organization of inspectors, which does not report to the foremen or superintendent, maintains the quality of the product. This practice, however, is seldom, if ever, applied to offices where department heads and their subordinate executives are held responsible for both the quality and quantity of work done by those under their control. It is therefore necessary for line executives to arrange for such inspection of office work as will assure the maintenance of quality standards both as to accuracy and appearance.

Units of Measurement. The first step toward measurement is to decide on the unit, that is, the individual thing which is to be used as a standard of measurement. Upon the proper selection of this unit largely depends the success of the measurement: it must be understandable by the average person and easy to apply or it is not likely to be used to the best advantage.

Whenever it is deemed worth while to measure and record the quantity of work done, it is invariably worth while to measure and record the errors. The unit of measurement of accuracy is therefore set down in this paper along with the unit of measurement of output, except in those cases where it is so obvious as not to be necessary.

Before units of measurement can be decided upon it is necessary to know what is to be measured. For our present purpose office work may be divided into four classes:

1. Handling papers.
2. Correspondence and typing.
3. Clerical and statistical.
4. Accounting

1. Handling Papers. The first class of work, handling papers, includes the handling of incoming and outgoing mail, departmental communications, messenger service, and the sorting, filing, and finding of papers. In general the unit of measurement here is a sheet of paper or several sheets fastened together and regarded as one letter or report.

In the handling of *incoming mail* in a *mailing department*, the units of measurement of output and of errors are as follows:

In the operation of slitting envelopes by machine or by hand the unit of output is one envelope and the unit to be used in measuring quality is the contents of one envelope which are cut or mutilated.

In taking papers from envelopes and date stamping them, the output is expressed in the number of letters or reports, and the quality is measured by the number of letters which are not date stamped.

In sorting papers the unit is again a letter or a report and the quality is reflected in the number of errors in sorting.

In the distribution of mail the unit is a station or desk to which mail is delivered and the quality is judged by the number of batches of mail delivered to wrong stations or desks.

In each of the above cases, except the last, the unit of measurement of output is a piece of paper. Before any standard can be set or any progress recorded the time element must be introduced. The amount of work done must be expressed in quantity and time; for example, the number of envelopes opened per minute, per hour, or per day.

In the handling of *outgoing mail*, the first operation is the collecting of papers from stations or desks. This work is measured in the number of trips and the number of stations or desks visited on each trip. Errors consist in variations from the schedule, that is, the failure of a messenger to stop at a station as directed in his time table.

In the sorting of outgoing mail, the unit of output is a letter or report and the quality is measured by errors in sorting.

In enclosing outgoing mail, where letters are checked before being placed in envelopes, the unit of output may be the number of envelopes, the errors being made up of letters enclosed in wrong envelopes and later returned from the recipients.

In stamping mail the unit is the number of envelopes and the errors consist of envelopes returned due to incorrect postage.

In handling incoming and outgoing telegrams and cables, the unit of output is the number of telegrams or cables and the errors consist of inaccurate records or delays in transmission.

In dispatching interdepartmental communications, the unit of measurement is the number of papers handled and the errors consist of mistakes in sorting.

In messenger service outside of the office, the unit of measurement is the number of trips to the various zones of a city, the quality of the work depending upon the time spent on the trips.

In a *filing department*, the output is measured usually in the number of papers sorted, placed in the file, or taken out of the file. Quality of filing is maintained by periodical inspection of the contents of files and the recording of papers misfiled.

2. Correspondence and Typing. Correspondence and typing include the dictation of letters, instructions or reports, the transcription of dictated matter, copying, duplicating, addressing, etc.

In the *dictation of letters* or reports the unit of measurement is the number of lines dictated, and the standard is expressed in lines dictated per minute. The quality can be maintained only by a periodical inspection of outgoing letters.

In comparing the work of two dictators allowance must be made for the relative difficulty of the matters handled. However, delays in dictation are not due so much to the difficulty of the subject as to the lack of preparation and to interruptions due to telephone calls or conversations.

In *transcribing matter* from dictation or from a dictating machine and in copying, output is measured preferably in lines.

In order to use this unit it is necessary to standardize the length of line. (This is usually six inches.) It is then easy to measure the number of lines by laying on the typewritten page a scale showing on one side the number of lines for single spacing, and on the other, double spacing. The standard for transcription is therefore expressed in a number of lines per minute. This standard differs according to the style of type, that is, the standard for lines of pica type is greater than for elite type. It also varies according to the difficulty of the matter dictated.

There are other units of measurement for typewriting work, one of which is square inches. This, however, is unfamiliar to most people, because they have never seen a square inch of typed matter. A measuring scale for square inches must be as large as the sheet of typewritten matter and is more awkward to apply than the scale showing the number of lines.

Typing is also measured by cyclometers, which record the number of strokes on the typewriter. The principal disadvantage of the cyclometer is that it records incorrect work as well as correct, and there is no easy way to make the necessary deduction due to errors. When the unit of measurement is lines or square inches, the quality is assured by the inspection of all outgoing letters, either by the head stenographer or by the dictators. Work which is not up to the company's standard is rewritten and only typed matter which passes inspection is measured and recorded.

Although transcription from dictation and from dictating machines and copying are all measured in lines, the standards expressed in lines per minute, differ for each kind of work.

In the *typing of orders or invoices*, whether done on standard typewriters or on billing or accounting machines, the output is usually measured in long or short orders or invoices.

A careful analysis of the number of items per invoice is necessary in order to determine a standard. The quality in typing figures should be maintained by careful inspection or by checking on adding machines.

In the *cutting of stencils* the unit is the standard line, unless the stencils are confined to names and addresses, when the unit is a name.

In *addressograph* work the making of new plates is measured in number of names. The running off or printing is also measured in number of names.

The standard may be the number of envelopes addressed per hour, the number of names listed on a payroll per hour, et cetera.

In *multigraph* work the unit for composition is the number of lines set up and for impressions the number of sheets printed.

In the use of "Ditto" or other types of *duplicating machines*, the output is measured in a number of impressions, the quality being reflected in the number of illegible or spoiled sheets.

In *automatic typewriting* the unit is the typed line. The standard, however, is usually expressed in the number of letters, after having taken into consideration the number of lines per letter.

3. Clerical and Statistical. Clerical and statistical work consists in general of transferring information from one set of forms to another set or to a report. This usually entails a rearrangement or tabulation of information, together with the drawing off of totals, averages, percentages, etc., and is done either by hand or by the use of office appliances. It is difficult to differentiate between clerical and statistical work, but without being too precise we may include in statistics the handling of figures and in clerical work the transferring of information which consists partly of figures and partly of other information.

In an *order department* the unit for measuring output is an order. If there are different kinds of orders on which the amount of clerical work varies, the standards will vary according to the type of order.

The measuring of errors differs from each operation. In visiting or checking the accuracy of orders, the errors consist of mistakes overlooked. In entering orders on an index, the errors may be in copying or in omissions of information. In extending prices, errors are made up of mistakes in extensions. In checking items filled or shipped, the quality of the work is measured in items overlooked.

In a *traffic department* the output is measured in:

Number of shipments routed.

Freight bills checked, etc.

In a *purchasing department* the units of measurement are:

Requests for quotations sent out.

Purchase orders placed.

Purchase orders filled.

Invoices approved for payment, etc.

In a *storeskeeping department* which keeps a live inventory or balance of stores, work is measured in the number of entries made on balance cards or in the number of forms from which postings are taken.

In the drawing off of reports or in miscellaneous clerical work, output is measured either in the number of forms handled or in the number of reports completed. In a few cases the number of items transferred represents the output.

In the setting of standards the number of items per form or report must be taken into consideration. The quality is reflected in the number of errors in posting, in extensions or in footings or in the number of items omitted.

Clerks frequently have to sort or file papers or do other work not included here under clerical, but the four divisions mentioned here are of office work rather than workers.

4. Accounting. Accounting, the fourth and last class of office work, consists principally of posting information in dollars and cents from one set of records to another, in totaling entries and proving their accuracy and, finally, in drawing off from these records certain reports which show the financial condition of the business.

In posting debits and credits, the amount of work is expressed in items posted. The accuracy is measured in mistakes in postings.

Standards for work of this kind are usually expressed as a number of items posted per hour.

In auditing invoices the unit of measurement is the invoice and the measure of accuracy is the number of mistakes in invoices which are overlooked.

In the operation of adding or calculating machines the work is measured in the number of forms or folios handled and the errors obviously consist of figures incorrectly transferred to the machines.

When accounting is done on tabulating machines work is measured in:

- Number of forms coded.
- Number of forms punched.
- Number of punch cards checked.
- Number of cards sorted and filed.
- Number of cards tabulated, etc.

Supervision of Office Work. The object of supervision is to get work done accurately, on time and at a reasonable cost. All of the characteristics which a supervisor needs are brought into play in the execution of his task of getting work done. By making a special drive any supervisor, no matter how poor, can make a good record for one day and even for a few weeks, but if over a long period of time he gets the work under his charge done accurately, on time and at a reasonable cost, we must acknowledge that he is a good supervisor.

Since it is the responsibility of the supervisor to get work done, the units of measurement of his work are the same as for the work supervised.

In a stenographic department as a whole the unit of measurement is the line transcribed or typed. The quality is measured in the number of errors which go out of the department.

A standard set for a head stenographer differs from that of a stenographer. The latter is judged according to the number of lines per minute—she has no control over the assignment of work or the amount of time she spends waiting for work. The head stenographer, however, is judged not only by the rate at which her subordinates do their work, but by the assignment of work. Her standard is therefore expressed in the number of lines transcribed and typed per day and in the number of lines left over at the end of the day.

The work of other department heads is similarly expressed in an overall measure rather than in detailed operations. For instance:

Number of orders passed through and left over.

Number of policies handled and left over.

Number of transactions handled and left over.

Much of the work which has been mentioned might be *graded*: for instance, a supervisor might be graded as to initiative, loyalty, cooperation, responsibility, etc. Also quality might well be graded, particularly as to appearance; for instance, a head stenographer might have a form of letter in mind the appearance of which she would arbitrarily value at 100, and when inspecting a particular letter she might compare it with her ideal and value it at 80. In this paper we are not concerned with grading, which is judgment or opinion expressed in figures, but with the quantitative measurement of work. It is the general practice to make use of grading only where it is not possible to secure accurate measurement.

It may be said that it is not worth while to measure and record some of the comparatively simple operations which have been enumerated here. It is undoubtedly true that in a small office which receives a few hundred letters per day, it is not worth while to measure and record the operations listed here under a mailing department, but in a mail order house which receives 100,000 letters per day, it is well worth while. The volume of work is the principal factor in deciding whether or not it is advisable to measure and record office work.

This paper does not attempt to urge the measurement of work or to present any formula by which one can tell whether or not it will be profitable to measure any particular activity. The purpose is rather to enumerate some of the units of measurement which are accurate and practical, so that when it is considered desirable to measure any specific kind of office work, it will be easy to make the first step, which is to decide on the unit of measurement.

THE TECHNIQUE OF DETERMINING THE "ONE BEST WAY"¹

By B. EUGENIA LIES, *Director of Planning, R. H. Macy & Company, Inc.*

The purpose of determining the one best way of doing work is, as Gilbreth has said, in "Applied Motion Study" (p. 41), to eliminate waste due to "needless, ill-directed, and ineffective motions and their resulting unnecessary fatigue, and the transformation of such ill-directed and ineffective motions into effective activity." Such effective activity results in increased production, as measured by the unit of work or unit of measurement.

In order to illustrate the method of determining the one best way, we have selected a very simple operation which occurs in the record room; that is, the operation of posting errors on the Record card. These error records include those premiums or errors made by salesclerks which are detected by cashiers and merchandise checkers (that is, wrappers), late slips which record tardiness, blunder reports covering errors made in writing sales-

¹ This paper was read before the Office Executives Conference of the American Management Association, February, 1926.

checks, and others. The error records are posted on the inside of the record card.

We have chosen this simple operation as an illustration in order not to obscure the description of the technique by a complicated operation. The method, however, may be used equally well for a complex system. It consists of

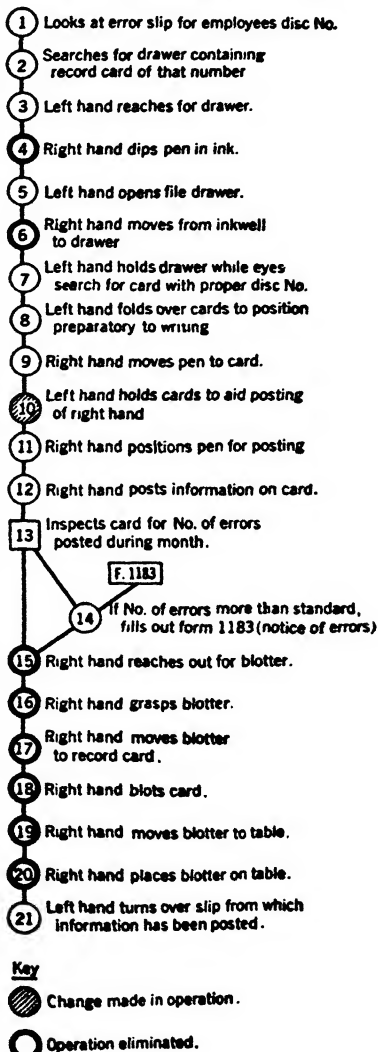
1. Analyzing present methods.
2. Selecting the best elements of those methods or determining simpler, better and more direct methods, if possible.
3. Synthesizing the best elements into the one best way.

The process chart shown in Fig. 1 is the instrument used for analyzing the operation. It shows in a graphic way the detail of each step and every variation which may occur in each step of a process. The sequence of each step is shown in the chart both by the number given to the operation and by the location on the chart. The steps are shown following each other in the order in which they occur. If there are variations, each possibility is shown as a different section breaking off from the main line.

The nature of the steps is indicated by the symbols. For instance, the large circle indicates an operation, or something done; a small circle indicates movement; a square indicates inspection for quantity, and a diamond, inspection for quality.

After a process chart is made it is possible to see easily what steps are unnecessary. Also, it is possible to see what effect the elimination of one step will have on the rest of the process. That is, the process chart is a means

PROCESS CHART OF HAND POSTING OF ERRORS ON EMPLOYEES RECORD CARD



1. Of recording present practice in

FIG. 1.—Process chart used for analyzing the operation.

2. Of studying that practice step by step in order to determine the value of each step in relation to the rest of the operation.
3. Of determining and showing changes made in the operation.
4. Of recording, finally, standard practice.

Figure 1 shows the process chart of posting of errors on the record card. As the operation was being done at the beginning of our study, it involved twenty-one different steps. Eight of these steps have been eliminated and one has been changed.

The steps eliminated involved the use of pen and ink for posting and the resulting blotting of the entry. They were eliminated by substituting colored pencil for posting. The step which was changed was this: Originally the left hand held the cards back while the right hand posted; now the right hand posts and holds the cards back at the same time, while the left hand is free to turn the slips from which the errors are being posted.

These changes are clearly shown in a motion picture which was taken of the operation in order to analyze the method and motions in great detail and to record time. The film is of particular value in recording quick motions which are too fast to be caught by sight, but which by the motion film can be recorded accurately and then projected as slowly as desired for studying in detail. That is, the film presents a permanent record for minute analysis. Moreover, it is an errorless record which will show the action to any observer at any time in exactly the way it occurred. It actually records the motions and the method so that a survey of the film presents the material to everyone in the same way. After the analyses have been made and improvements installed in the equipment, in the method, and in the motions; this is, after a standard method is in practice, films are also taken and form a permanent record of the standard method. These are invaluable not only as a record, but also as a means of training, etc.

In selecting the workers who are to be filmed, it is desirable to choose the operators whose methods obviously have some elements of particular interest. This does not mean that the operator is always the quickest, or that his method is entirely good, but rather that some phase of his method is particularly good.

The pictures are taken at the usual work place or in the laboratory equipped like the usual work place, showing the usual working methods. The Gilbreth clock makes it possible to obtain the time involved in each part of the operation. This clock shows the division of time in one two-thousandths of a minute so that the time analysis is very small. Frequently a cross-sectioned background screen is used by which the distance of particular motions can be measured.

When inserting cards, after posting, in the vertical file the worker has considerable trouble in locating the proper place for inserting the cards. This searching obviously takes too long and can be reduced by the installation of a more complete index.

Since posting the amount of commissions on the sales clerks' cards is a permanent record and must be put into rather small boxes on the record card, it is necessary to use ink. The moving picture showed that the operator was using, very inefficiently, a pen and inkwell. The use of a fountain pen

would be more desirable. It was so apparent that the operator's left hand was idle a large portion of the time. It was possible to coordinate the motions of the two hands better when the left hand was used more for finding the card on which the next posting was to be made.

The picture of posting errors as recorded on premium slips showed that the arrangement of the work was obviously bad, in that the premium slips from which the data were being posted were kept on top of the file. This meant that the operator's hand moved a long distance from the file drawer to the pile of slips. The equipment also needed improvement. For instance, the employee was standing and bending over the tray. Much fatigue would be eliminated if she were seated at her work. She was also using pen and

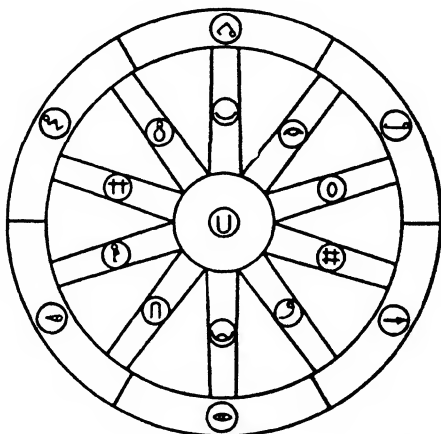


FIG. 2.—Wheel of motion showing the complementary motions, also identified in practice by colors on Therblig chart.

ink which meant blotting the entries, as well as delay in dipping the pen into the ink. Also, there was evident delay because the right hand was doing too much of the work; that is, it was used for finding the card on which the posting was to be made, for writing the information and for blotting the entry.

A later picture showed the posting operation with some improvements. In the first place the arrangement was improved. The work ahead was put on a tray at the side of the drawer so that the distance between the work ahead and the cards on which the posting is to be made was decreased. The operator was seated and was posting with a crayon pencil instead of with pen and ink.

When the work place is arranged in the standard fashion the motions of the hands have been greatly decreased; that is, the right hand is used for finding the card and for holding the cards back, as well as for posting, while

the left hand turns over each premium slip as it is posted. The motions have been reduced so that the operator is reaching a minimum distance and is making as few motions as possible.

As stated above one advantage of taking a film is that the motions can be analyzed in detail. This is done on an analysis sheet and shows the period of time each motion takes. In this connection we should explain that the operation is analyzed into elements of motions or therbligs. These elements are minute divisions of motions, such as grasping, transporting loaded, etc.

As shown in the therblig chart¹ the seventeen elements of motion or therbligs are: Search, find, select, grasp, transport loaded, position, assemble, use, disassemble, inspect, preposition for next operation, release load, transport empty, rest for overcoming fatigue, unavoidable delay, avoidable delay, plan.

This chart also shows the symbols which are used for the elements and the colors which are assigned to them. Figure 2 shows the wheel of motions, illustrating the complementary motions; transporting loaded, for instance, is opposite transporting empty; releasing load is opposite grasping; assembling is opposite disassembling, etc. The complementary motions are easily identified because different shades of the same color are used for the complementary motions. Transport loaded is shown by dark green, and transport empty by olive green. The complete operation is analyzed into these fundamental elements of motion on the analysis sheet shown in Fig. 3.

This analysis is then shown in a visible form on a simultaneous motion cycle chart (which is called "simo chart" for convenience). See Fig. 4. This chart is made on cross-sectioned chart paper, with the time element shown by the vertical divisions, each division = $1/2,000$ th of a minute, and the description of the motion and the different numbers of the body used in each motion are shown horizontally. Here the analysis of the motion is particularly evident because a different color is used for each element of motion or therblig. At a glance, therefore, one can see the duration of each element and the duplication of each element. For instance, in the simo chart, which was made of the insertion of the card in the vertical file the enormous amount of time spent in searching was very evident. Thus, the simo chart shows quickly the elements of motion involved in the operation and the length of each element of motion.

One Best Way. By studying and comparing the simo charts, it is possible to discover which are the essential elements of motion in the operation, which are the shortest elements of motion, and which elements are taking a large part of the total time and should therefore be studied for possible elimination or shortening of the system involved. For example, all instances where avoidable delay occurs, should be carefully scrutinized and eliminated, if possible. This is particularly true when one hand is being delayed or is holding while the other is occupied. When this searching analysis of each simo chart is completed, the essential and shortest elements of motion are put together into the one best way. The one best way, as thus constructed, is established as the standard method of performing the operation.

¹ See p. 638

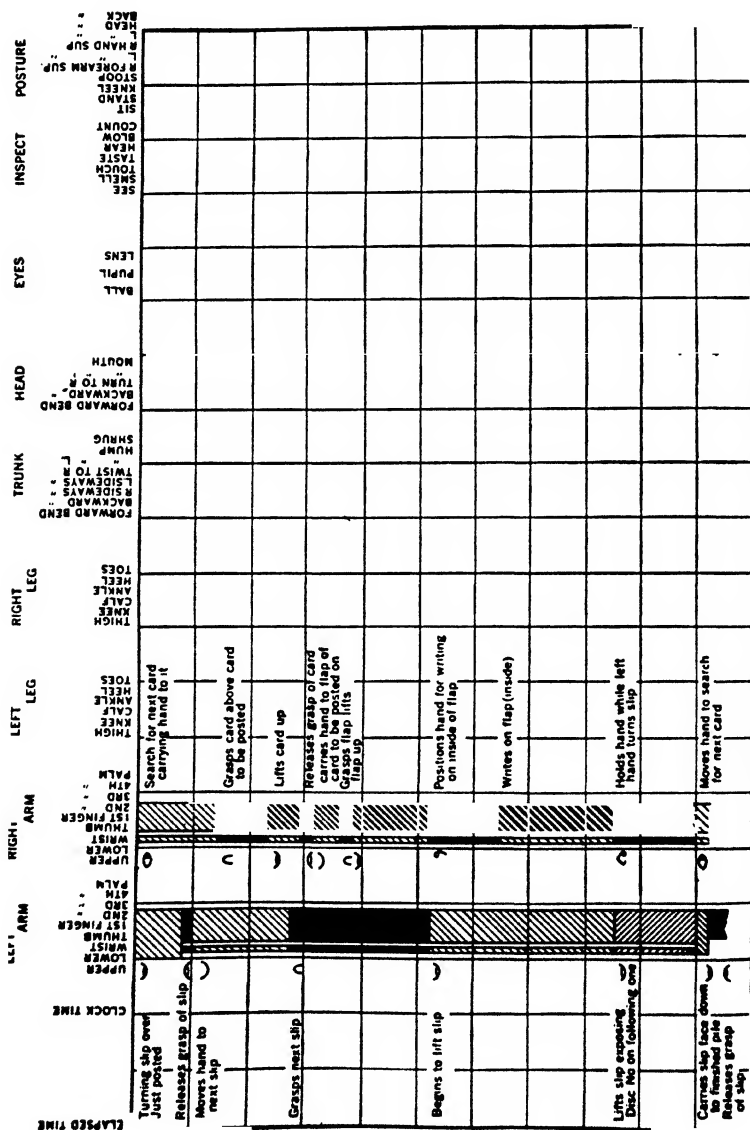


FIG. 4 "Simo Chart" giving the analysis into fundamental elements of motion in visible form

In order to introduce the standard procedure officially, a standing order is prepared and is issued by the general manager's office, authorizing the department manager to install the standard procedure and placing upon him the responsibility for maintaining the standard procedure. That is, no changes in the procedure can be made without notifying the assistant general manager who is responsible for that department. If a suggested change is found upon investigation to be desirable, the standing order is revised. Thus, an authoritative statement of each procedure is issued and serves as a means of installing the procedure and of maintaining it.

An instruction card is also prepared, explaining in detail the exact method of performing each phase of the procedure outlined in the standing order. The instruction card serves as a means of instructing the individual employee and also as a standard against which the work of the individual employee may be measured.

We have thus shown the details of the method which we use in establishing the one best way, that is,

1. Analyzing the present procedure, methods, and motions.
2. Standardizing the surrounding, the equipment, the tools, and the motions.
3. Maintaining the standard conditions and methods by means of the standing order and the instruction card.

The subsequent steps to the establishment of the standard include, on the basis of the one best way which has already been established:

1. Determining a standard day's work, and
2. Developing a bonus plan for providing incentive and for compensating the employee on the basis of actual production.

These steps are possible after the best methods have been established and a unit of work determined.

DETERMINATION OF WORK UNITS FOR OFFICE MACHINES

By I. O. ROYSE, *Manager, Office Production, Ralston Purina Co., Inc.*

Office machines are being installed on the theory that they will reduce clerical work and prevent an increase of the office pay roll. It is apparent that work may be done faster with proper machinery than it can be done manually. If, however, the clerks using machinery do not utilize the time saved the result is an actual loss to the institution. It follows that it is of paramount importance that production be measured as the means the office executive has for justifying the purchase of machines.

In addition, measurement of work assures the office executive of:

1. Knowledge of clerical help necessary.
2. Control and scheduling of work.
3. Rating of workers and determining a suitable reward for efficient work.
4. Getting the work done.

A unit which will accurately portray the progress made on a machine during a definite period is necessary for measurement. The determination of significant work units is the problem. In measuring work on office machines, certain factors vary so that any one of them may affect production on a given operation, namely:

1. Speed of machine.
2. Size and quality of material.
3. Individual differences of the operator.

The most effective speed of the machine, *i.e.*, the greatest speed at which the machine may be run without impairing its efficiency, will certainly affect production. That speed must be determined and checked frequently to insure standard conditions. Mechanical changes on any machine should be allowed only after they are proven to be beneficial. In that case all machines in the bank should be similarly changed. The size and quality of material—especially on duplicating machines (multigraph, mimeograph, etc.)—will also affect output.

The ability of the operator to do certain kinds of work well is the object of much consideration. Certain specific abilities are required in some operations and not in others. For example, a person operating successfully a multigraph machine can not necessarily operate a billing machine with the same proficiency. Specific psychological tests have been, and are being devised as an aid in classifying operators. With the use of these tests it is possible to place the worker with some degree of accuracy in the position where she is most likely to succeed.

The actual steps and procedure used in this case to determine the work units for office machines are given here:

- A. Preliminary steps.
 1. Analysis of job:
 - a. Material.
 - b. Equipment.
 - c. Conditions.
 - d. Methods.
 2. Standardization.
 3. Selection of and obtaining proper attitude of workers to be studied.
 4. Motion study.
 5. Time study (determine net production per hour).
- B. Recording production.
 1. Obtain necessary information:
 - a. Identification.
 1. Department.
 2. Operator.
 3. Machine and operation (sketch arrangement).
 - b. Production.
- C. Final analysis and conclusions:
 1. Consider individual differences of operators.
 2. How will errors be taken care of?
 3. Allowances:
 - a. Unavoidable delays.
 - b. Personal time.

- c. Fatigue.
- d. Irregularities.
- 4. Determination of work unit.
- 5. Set up trial production standards.
- 6. Check information for accuracy.
- 7. Provide for maintenance of quality.
- 8. Determine what records will be needed.
- D. Verify conclusions by further study and recording.

Figures Illustrative Only. *The figures in this paper are selected for illustration only and cannot be used safely for establishing standards.*

Graphotype. The work consists of embossing one-piece metal address plates on type G 3-44 graphotypes. The work must reach each machine in a standard condition and similar equipment must be available. After the necessary changes are made for standard and desirable conditions the entire cycle of work is studied and divided into definite elements as follows:

	Minutes
1. The operator is given a job ticket, list of names and a time ticket "rung in" for her.	1 00
2. List is placed in the copy holder and adjusted. ....	.30
3. A tray of blank address plates and an empty tray are placed in position on the right table of the graphotype machine (blank address plates must be next to operator)	1 15
4. The operator places a working supply of address plates to the left center of the machine table. ....	.08
5. With the list as a guide, the operator embosses the address plates placing them to the right center of the machine table and later, when a sufficient number has been accumulated, to the empty tray on the right table (see 3 above) ....	.90
6. As each name is embossed the list holder is changed to index the next name ....	.01
7. If more than one tray of address plates is embossed, additional ones may be procured from shelves directly behind the operator. ....	.01
8. The tray of embossed address plates and the list are returned to the supervisor and the time ticket is "rung out".	2 55

Study of the individual elements shows that four of them (1, 2, 3 and 8) are impractical for measuring the work because of the variation in the number of names on each list (job). From one of the other four elements (4, 5, 6 and 7), the basis for the work unit must be selected. Four, six and seven depend entirely upon five and may vary, hence the criterion for the unit is one address plate embossed. It would obviously be incorrect to measure the work on the graphotype machine by using the net time for embossing, i.e., number of plates embossed per hour. When the overall time is considered, this number varies with the interruptions due to job changes and necessary allowances. The unit determined must include allowances for these variables.

A study of embossing shows that 60 address plates per hour may be handled by a certain girl. Information obtained from a study of the other elements shows that a job change occurs on the average of once every 60 plates. The total time for 1, 2, 3, and 8 is five minutes. That leaves 55 minutes out of each hour. Adding 4, 6, and 7, and considering the number of plates embossed in

55 minutes means an additional allowance of 5.5 minutes. With no personal allowance or allowance for fatigue it would be possible to emboss 49.5, or say 50, plates per hour when all incidental handling time is included. The actual allowance made depends upon the judgment of the time study man. In this case about 12 per cent was allowed reducing the 50 per hour to 44. It is apparent that the figure 44 not only represents the plates embossed in an hour but certain handling time and all other allowances. The unit of work therefore involves more than the embossing of one plate. The measure of the output of graphotype machines may be made in terms of this unit, 44 of which is the standard for an hour's work.

The total production shown on the time tickets for the day should check with the total production on the finished jobs. The work is inspected and each operator is required to correct her mistakes on her own productive time. There is some variation in the number of strokes per address plate but over a period of time it is so little that an average is found practical (fifty-three strokes is found to be the average).

Addressograph. The cycle of work at the addressograph machines, model F-1, consists of seven elements:

- 1 The operator receives the job ticket, material to address and a time ticket "rung in"33 minutes
 2. The plates specified are taken from the file..... .75 minutes
 3. Plates are placed in the machine.62 minutes
 4. The operator takes a working supply of the material to be addressed and places it face down on the left side of the machine table..... .15 minutes
 5. The operator feeds the machine with left hand, material face down, and removes and turns it over with the right hand. A foot lever is used to regulate the speed of the machine..... 1,200 per hour
- NOTE. A helper inspects the work for defects. If necessary it is immediately returned to the operator who adjusts machine and reruns defective work, or helper makes the corrections by hand.
6. If other trays of plates are to be used for the same job the operator returns used plates to the filing cabinet and repeats operations 2 and 3..... 65, about .001 per address plate
 7. When the job has been completed the time ticket is rung out..... .30 minutes

The unit finally determined is based upon element 5. Study of this element shows that 1,200 pieces per hour is a basic average on a straight run. It also shows that there is approximately 1 job change requiring 2.5 minutes to each 150 pieces addressed. In 1 hour 6 jobs of 150 can be completed. An allowance of 12½ per cent is made on this operation reducing the expected output from 900 to 800 units per hour.

Flexotype. Hand composition and distribution of loose type on letter-heads for multigraph work is done on the flexotype machines. Composition and distribution were studied separately. Cycle of elements of the flexotype operation follows:

A. Composition.

1. The operator takes job ticket and master copy from the in-basket and separates them. From the job ticket the information required for keeping record of the work may be obtained.

2. Time ticket is "rung in."

3. Margin alignment and proper spacing is arranged on the segment by referring to the master copy.

4. The master copy is placed in the copy holder.

5. With the flexotype-setter directly in front of her and the segment on her left, the operator releases or "picks" a line of characters from the channel of the machine banks and transfers them to the channel of the composing fork.

6. After each line is transferred to the fork it is set on the segment.

7. The type is spaced for indentation and "frozen" in place on the segment by the use of lock-line clips.

8. The completed segment, together with the job ticket and master copy, is placed on the desk of the girl who makes proofs of all work composed.

9. The operator "rings out" the time ticket.

B. Distribution.

1. After the job has been run, segment, master copy, and job ticket are returned to the operator.

2. The operator rings in a job ticket to cover distribution time.

3. The type is taken, line by line, from the segment onto the fork and distributed in the flexotype-setter.

4. When complete the operator rings out the time ticket.

When the proof reader discovers any errors the segment is returned to the original compositor who makes the correction on production time. The ratio of composition to distribution is found to be about 7 to 9. As it is necessary to distribute all type composed it is found that a single unit can be determined which will accurately measure the whole operation. The type set may not be distributed for a week or more, therefore it is impossible to give the operators credit for both composition and distribution at the time the letter is composed. The measurement determined, based on pieces of type set, is 880 units per hour.

An extra proof of the letter is made and the count is estimated on the line basis. This count is copied on the time ticket attached to the proof. After the type is frozen on the segment, proofed and okehed, the segment, together with the material to be printed, is placed on a table behind the multigraph machine operator. That brings the job to the multigraph operator in the same condition each time.

Multigraph. Manual, automatic, and Davidson Automatic feeds are used which make it necessary to have three distinct units of measurement on multigraph work. The units are similar, varying only on account of time allowed for adjustments, constancy of feeding, fatigue, etc., as well as increased speeds in the case of automatic feeding. The elements for the cycle of the manual fed multigraph work are:

1. The machine is inked (as a rule a machine is inked only once a day), the segment placed upon it, a trial sheet run through and compared with the master copy to get proper placement. If adjustments are necessary they are made and a working quantity of material is placed upon the machine "table."

NOTE. If anything other than an imprint job the copy must be okehed by the supervisor before beginning the job.

2. The calculagraph ticket is rung in.

3. The operator picks up the material with her left hand, places it on the paper table, and feeds the machine with her right hand (this element would be changed for automatic feeding).

4. When more material is needed it is obtained from the table directly behind the operator.

5. When the job is complete the operator cleans the type on the segment, removes the segment from the machine, places it upon the table directly behind her and picks up the next segment with job ticket and master copy.

NOTE. Stopping one job and starting another, as indicated, is recognized as a change for which a special allowance is made in terms of the multigraph unit.

6. When job is complete the ticket is rung out.

A machine helper and lookup girls supply the material as well as inspect the work done and lay it upon the drying racks. If a machine breaks down, or something occurs which is beyond the control of the operator, she "rings out" her time ticket and "rings in" a general time ticket.

The unit for multigraph work is based upon the number of pieces fed. Automatic and Davidson feed units differ from hand feed units in proportion to the variation in element 3, as well as other variables. In this particular operation we must consider special work which does not occur regularly with each job. Example: (1) If proof is taken by operator an added allowance in terms of the multigraph unit is made—allowance is equivalent to average time required for this additional work. (2) Change allowances are also made to compensate the operator who runs a number of small jobs instead of long jobs. These allowances are determined by the time required to make the change. To illustrate, if hand feeding can be done at the rate of 1,000 per hour, the allowance made for the change mentioned in element 5 would be $8\frac{1}{3}$ units when the average change requires one-half minute. $\frac{(1,000 \times .5)}{60}$.

Mimeograph. The unit for measuring mimeograph work is also based on the number of pieces run. The complete cycle of 15 elements enters into the determination of the production requirement of 786 units per hour. While a quantity of slip sheeting is done, the operator can do it without materially decreasing the speed.

Ditto. The ditto machines are used on two distinct classes of work. In the one department the machine is used to duplicate orders. The number of copies required varies from about 10 to 22, the average being 12 copies per master copy. The small number of copies per job means a greater number of job changes and less time every hour in which to duplicate. An allowance for separating copies after duplication is required. The unit per hour is based upon the single duplicated sheet. The other ditto machines present an entirely different problem. Two distinct classes of jobs are handled on them. One class is composed of long jobs requiring no extra handling, while the other class consists of special semi-weekly reports requiring few copies per master sheet. The work is divided and different units determined for each class. On the short job class the work unit must provide for more allowance time

on account of the increased number of job changes for a given number of duplicated sheets. The nucleus for the unit in both cases is the single duplicated sheet.

The last two operations to be discussed will present two entirely different problems. One is measurement of work on the Hooven automatic typewriters, the other is measurement of work on the Burroughs-Moon-Hopkins billing machines.

Hooven Typewriters. Measurement of work on the automatic typewriters is done in the following manner: This typewriter operates automatically by means of a "stencil" cut on a separate machine. The completed stencil resembles a player piano roll, which is placed on the typewriter and turns over a drum or feed wheel. Little teeth drop into the holes made in the stencil forcing that particular type bar to print. There are fifty channels in this feed wheel, which is regulated to turn thirteen and one-half times per minute. If it were possible to have a stroke for every channel, 675 strokes could be made every minute; however, the stencil cannot be cut to give this result. A certain allowance must be made on the stencil for carriage returns, shifts and other adjustments peculiar to the machine. A detailed study of the stencils cut shows that the efficiency of the machines are reduced approximately 18 per cent by using the necessary spacing. That decreases the possible machine speed to 550 strokes per minute.

As many as five machines are operated by one girl at a time. The problem is to determine the measurement of the production when more than one machine is operated at the same time. A time allowance of 12 per cent for fatigue, delays, putting paper in machine, etc., leaves only seven possible hours running time per eight-hour working day. To facilitate the measurement of work done a cyclometer is used, which registers ten strokes per cyclometer unit reading. The output of one machine is calculated to be 29,932 strokes per hour. Study of the work on more than one machine shows that the efficiency of the machines is reduced as each machine is added. The following table shows the reduction:

Machines	Percentage Efficient
1	100
2	81
3	56
4	50
5	47½

Additional allowances are made in terms of this cyclometer unit for the following:

1. Changing stencils (96 units).
2. Address letter manually (48 units).
3. Allowances per envelope addressed on a regular typewriter (12 units).

Billing Machine. At first it seems impossible to measure the work of the Burroughs-Moon-Hopkins biller. Seven different invoices are used and because of different methods of shipment such as pool cars, stop-over cars, etc., numerous irregularities frequently occur. Copies of invoices and records

of the various kinds were kept for a period of three months. The measurement was further complicated because girls doing the work for different sales territories had entirely different kinds of invoices to write. The amount of typing on each invoice varies considerably. Five distinct groups of invoices were found which showed such a degree of similarity that certain parts of the invoices for each group could be written in approximately the same amount of time. However, the criterion for measurement could not be based upon that time, as the overall time for writing the invoices varied in proportion to the number of commodities listed on each. Further study showed the time for writing the name of commodities on each group of invoices to be practically equal. In order to determine the value of that fact as a basis for measurement, it was decided to divide the billing operation into its elements. The resulting cycle was found:

1. "Ring in" time ticket when starting invoice.
2. Take order (with correspondence attached) from in basket.
3. Unclip and spread out on machine table.
4. Take invoice from cabinet with left hand, place against left paper guide, and roll into place with right hand.
5. Type heading.
6. Type shipping instructions.
7. List commodities and make extensions.
8. Turn invoice out with right hand, push back into roll with left and turn roll with right, bring back of invoice forward.
9. Prove extensions and total.
10. Prove weights and total.
11. Take invoice out of machine.
12. Assemble and clip together.
13. Mark production report (show kind of invoice written and number of commodities).
14. Stamp invoice with credit stamp.
15. Ring out ticket unless there is more work waiting in which case the cycle should be repeated.

Every order is carefully inspected and all irregularities cleared, making it possible to deliver them to the biller ready to write. After the invoice has been written it is carefully checked for errors. Errors made by the biller are corrected by her on productive time. Other irregularities overlooked by the clearer are in most cases corrected by rewriting. The biller gets credit for this rewriting.

Time study shows that each element in the cycle, with the exception of those which vary with the number of commodities listed, can be typed in approximately the same time. Most of the elements in the cycle are affected by the number of commodities listed, however. The more one studies this operation the more apparent it becomes that no one element will furnish a criterion of the output. If some element, most indicative of the quantity of work done, can be used as the unit and the other variables evaluated in terms of that unit, certainly the amount of work done on an invoice could be measured.

Let us, for example, say that we shall take invoice type "A." Time study has shown us that the following points would be allowed to bill the invoices:

	Units
1. Time allowed per sketch.....	20.1
2. Time allowed per item.....	8.7
3. Typing time allowed per cyclometer unit.....	1.2

Therefore, if invoice "A" has ten items and twenty typing units the allowed points will be 131.1.

Success or failure in the measurement of any work depends upon a clear concept of the best theory and practice in the application of analysis to that work. It is impossible to definitely determine an accurate and fair work unit unless procedure similar to that given herein is followed. On much machine

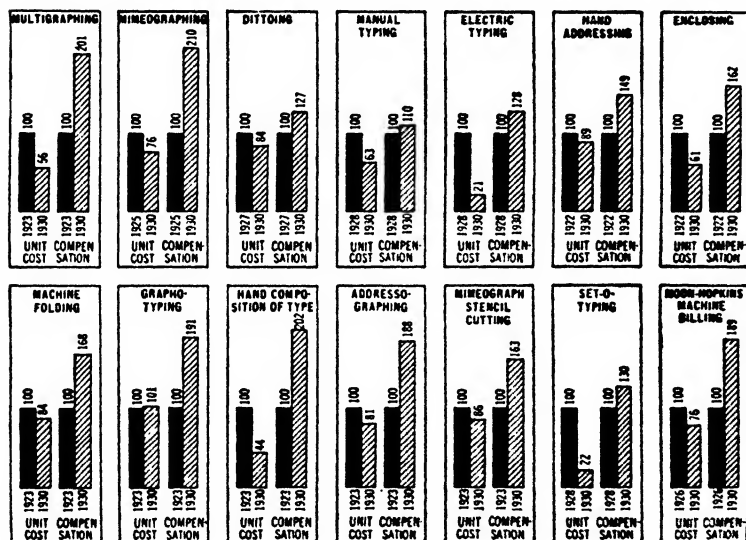


FIG. 1.—Results obtained by installation of wage incentive for office workers Ralston Purina Company, St. Louis, Mo.

work the criterion for measurement is the number of pieces handled. The actual unit of measurement for each machine, however, not only includes the handling of the piece of material or accomplishing an arbitrary amount of work but it is the work plus an allowance sufficient to cover known and possible unforeseen delays.

The results of the installation of wage incentive plans for our office workers have been very gratifying, indeed. Considering 100 per cent to be the unit cost of production on an office operation at the time the incentive plan was put into effect a direct ratio with the present cost has been calculated. In only one of fourteen operations has the unit cost increased any and in that

instance the increase was 1 per cent. In the thirteen other operations the present unit cost ranges from 21 per cent to 89 per cent of what it formerly was (see Fig. 1).

Using as 100 per cent the compensation that was paid the workers when the various operations were put upon an incentive basis a direct ratio between original and present salary has been determined. In every single instance the wage plus bonus that is now being paid the workers has shown a remarkable increase over what the pay formerly was. The smallest increase in remuneration was 10 per cent, in an operation standardized only two years ago as compared with other operations standardized seven years or more. Other operations have shown increases up to 110 per cent over what the pay was before the inauguration of the incentive plans. Three of the fourteen operations show better than a 100 per cent increase while six have shown an increase of 80 per cent or more.

MEASURING OFFICE OUTPUT¹

By JOHN MITCHELL, *Associate Director of Staff, H. A. Hopf and Company*

Office output has a large number of variables that affect it. Not only is the nature of the work different, but the method of doing it varies between industries, companies within an industry and even between offices of the same company. To make the problem more difficult, the titles used for office jobs may be the same in half a dozen concerns, but the duties may be all different. To add to these difficulties, we must consider the human element with all its frailties.

The scientist in approaching a complex problem of this nature endeavors to resolve it into simple terms. He then takes each term, analyzes it carefully and lists the elements which he finds in it. He then defines each element and classifies it. From combinations of these elements he works out a conclusion to the particular problem and also other related problems.

Units of Measurement. In the same scientific manner we have resolved office work into simple terms such as, billing, typing, transcribing from dictating machines, key-punch and tabulating work, etc. The customary nomenclature used may be the same in all companies, but a brief analysis will show that there is a real difference in the work performed. For example, billing is a common term, but the work performed under that title will vary considerably as between a manufacturing and a merchandising concern. Altogether different from both will be the billing work which is performed in a public utility.

One may readily see that with such a wide variation it would be difficult to compile any single set of statistics that would be useful to these three types of companies. We are therefore compelled to seek a more elemental unit than the document which is called a bill. The same condition is true in

¹ This study was made by Mr. Mitchell as chairman of the committee on measuring office output of the American Management Association and presented in the *Office Executives Series, Bulletin 29 and 35.*

typewriting. If one asks a dozen companies to give a record of the output of their typists, he will find that it varies from 3,000 to 9,000 lines a week. When he analyzes the returns he will find that a line may be six or eight inches. Some companies make certain allowances for the address, salutation, and complimentary closing, and extra carbon copies on the basis of lines. Here again one must determine an element which is common to all typewriting for the purpose of making a standard. This element is the tap of the typewriter.

The Operating Cycle. When units of work have been established the job is ready for measuring. Determination of which motions of an operating cycle are to be measured should be reached after consideration of the cost of such measurement as compared with the probable savings. In the majority of cases, in order to secure satisfactory results, at least the following portions of the operating cycle should be measured: (1) get-ready time; (2) time to do the operation or work; (3) clean-up time. Every job can be broken up into these three steps. The second step will vary directly with the volume of work while the other two will remain fairly constant.

The number of studies to be made before arriving at a standard time should depend upon the number of operators and volume of work involved. At least twenty should be made for each type and variation within the type of work.

Procedures and Time-study Sheets. The following procedures and time study sheets applied to specific types of office machines have been used successfully and provide a basis for designing similar forms for application to other office work.

PROCEDURE FOR MEASURING OUTPUT OF TYPISTS AND OPERATORS USING TRANSCRIBING MACHINES

Name

Date

Type of Business

1. Name and maker of machine (typewriter)
(Name and maker of transcribing machine)
2. Model or style number of typewriter
Model number of transcribing machine
3. Are machines in constant or intermittent use
4. Operator: male or female age Average weekly earnings
other duties:
5. Experience with transcribing machine years Education
6. How is output measured: cyclometer other method
7. Is work done on a premium basis or number of points, or other standard based on production alone, or including quality, versatility, etc.
8. Number of characters and spaces which constitute a line
9. Is operator familiar with dictators' manner of speech
10. Does correspondence or other papers accompany cylinder to the operator for assistance in proper addressing and spelling
11. Method used by operator: sight touch
12. How much "rest" time is granted to operator: morning afternoon
13. Give any exceptional operations peculiar to the work studied that are not covered in the data asked for above.

TIME-STUDY SHEET

1. Number of lines to be typed 6, 12, 18, 24, 30. Count taps of typewriter keys and space bar and insert in heading of respective columns (letter work).
2. Number of carbon copies prepared.
3. Operations to be timed:

Column 1. (One set of studies only.) Select paper, insert carbon, place in machine, adjust platen to first line of typing, place needle in position on cylinder, adjust head phones.

Column 2. Type data.

Column 3. (One set of studies only.) Take paper from typewriter, remove carbon, place with finished work, check complete on cylinder indicator strip.

Observations; use bare time without any allowances	1	3	2				
			6—	12—	18—	24—	30—
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
Total							
Average							

PROCEDURE FOR MEASURING OUTPUT OF ADDRESSING MACHINES

Name	Date	Type of Business
1. Name and maker of machine		
2. Model or style number	Driven by hand	Power Foot
Stencil feed: Automatic	hand	
3. Paper, card, envelope, etc., feed: automatic	hand	
4. Is machine in constant or intermittent use		
5. Operator: male or female	age	average weekly earnings
other duties		
6. Experience on addressing machine	years	Education
7. Position of operator: standing	sitting	
8. Kind of stencil or plate used	Distance of file from machine	
9. Is machine equipped with ink pad	Ink roller	Ribbon
Other		
10. How many stencils or plates are in a tray	Placed in machine at one time	
11. Average time to ink pad, roller or change ribbon	How often	
12. Is machine equipped with automatic selector	Other selector	
13. Other accessories		
14. Give any exceptional operations peculiar to the work studied that are not covered in the data asked for above.		

TIME-STUDY SHEET

- Kind and size of document imprinted.
- Number of stencils or plates used in this study. Number of impressions.
- Provision is made below for four separate runs on each variable under "1" above. A. Single impressions; B. Two impressions from same plate on one side of document; C. Two impressions from same plate, second on reverse side of document; D. Other impressions. If you have several other impressions change the headings and give full details in space for "remarks."
- Take studies of straight runs, and selecting certain plates by selector, on separate sheets. Give conditions under which the run is made in space for remarks.
- Operations to be timed:

Column 1.	Get ready. (a) Adjust machine to size of document. (b) Take plates from file. (c) Load machine with plates.
Column 2.	Operate: (a) Print; (b) additional plates loaded. State how many trays.
Column 3.	Clean up—(a) Remove plates from machine (b) return plates to file. (c) Jog finished work. Any element mentioned that is not used should be crossed off. If you wish to time each element, make up time sheet accordingly.

PROCEDURE FOR MEASURING OUTPUT OF ADDRESSING MACHINES

Name	Date	Type of Business
1. Name and maker of machine		
2. Model or style number	Driven by hand	Power Foot
Stencil feed: Automatic	hand	
3. Paper, card, envelope, etc., feed: automatic	hand	
4. Is machine in constant or intermittent use		
5. Operator: male or female	age	average weekly earnings
other duties		
6. Experience on addressing machine	years	Education
7. Position of operator: standing	sitting	
8. Kind of stencil or plate used	Distance of file from machine	
9. Is machine equipped with ink pad	Ink roller	Ribbon
Other		
10. How many stencils or plates are in a tray	Placed in machine at one time	
11. Average time to ink pad, roller or change ribbon	How often	
12. Is machine equipped with automatic selector	Other selector	
13. Other accessories		
14. Give any exceptional operations peculiar to the work studied that are not covered in the data asked for above.		

TIME-STUDY SHEET

- Kind and size of document imprinted.
- Number of stencils or plates used in this study. Number of impressions.
- Provision is made below for four separate runs on each variable under "1" above. A. Single impressions; B. Two impressions from same plate on one side of document; C. Two impressions from same plate, second on reverse side of document; D. Other impressions. If you have several other impressions change the headings and give full details in space for "remarks."
- Take studies of straight runs, and selecting certain plates by selector, on separate sheets. Give conditions under which the run is made in space for remarks.
- Operations to be timed:

Column 1.	Get ready. (a) Adjust machine to size of document. (b) Take plates from file. (c) Load machine with plates.
Column 2.	Operate: (a) Print; (b) additional plates loaded. State how many trays.
Column 3.	Clean up—(a) Remove plates from machine (b) return plates to file. (c) Jog finished work. Any element mentioned that is not used should be crossed off. If you wish to time each element, make up time sheet accordingly.

Observations; use bare time without allowance	Impressions on each run											
	A			B			C			D		
	1	2	3	Total	1	2	3	Total	1	2	3	Total
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												
20												
Total.....												
Average time.....												

**PROCEDURE FOR MEASURING OUTPUT OF MACHINES FOR CUTTING STENCILS
OR PLATES USED ON ADDRESSING MACHINES**

Name

Date

Type of Business

1. Name and maker of machine
2. Model or style number Driven by hand Power Feed: Automatic hand
3. Is machine in constant or intermittent use
4. Operator: male or female age average weekly earnings
other duties
5. Experience on this particular machine Years. Education
6. Position of operator: Standing Sitting
7. Kind of stencil or plate used
8. Are only capital letters used
9. Does operator verify stencil as soon as it is made later or does another clerk check it State clearly, method used and average time taken for each plate or stencil.
10. How is output measured: cyclometer other method
11. How much "rest" time is granted to operator: morning afternoon
12. The making and inserting of name cards on addressograph plates must be considered as a separate series of studies. The same is true in the case of inserting the plates in frames. These should be attached to this study. It is an essential part of the operating of an addressograph but not on other types of addressing machines.
13. Give any exceptional operations peculiar to the work studied that are not covered in the data asked for above.

TIME-STUDY SHEET

1. Kind and size of document from which data to be cut is obtained
2. Is data prepared in (a) longhand (b) typewriting (c) clean (d) corrected. A study should be made of each variable in "1" under condition (ac), (ad), (bc) and (bd), and any other method. Use separate sheet for each variable and condition.
3. Provision is made for 1-2-3 and 4 line plates. If other sizes are desired, in addition, change headings accordingly. *Count the number of digits or strokes of the machine under each heading*, and insert in space for that purpose.
4. Prepare runs of 10-25-50-100 for each variable and condition. Check quantity used for this study.
5. Operations to be timed:
 - Column 1. Pick up and insert stencil or plate in machine.
 - Column 2. Cut.
 - Column 3. Take out stencil or plate and place in tray.See paragraph 12 for further operations on addressograph.

Observations; use bare time without allowance	1 line				2 lines				3 lines				4 lines			
	1	2	3	Total	1	2	3	Total	1	2	3	Total	1	2	3	Total
1																
2																
3																
4																
5																
6																
7																
8																
9																
10																
11																
12																
13																
14																
15																
16																
17																
18																
19																
20																
Total																
Average time																
Number of digits																
Average digit per line...																

PROCEDURE FOR MEASURING OUTPUT OF DUPLICATING MACHINES, GELATIN ROLLS

Conclusions from Measurement Survey. A survey in which the foregoing procedures and time study sheets were used has provided a great deal of interesting and valuable data:

Age, experience, education, earnings and sex apparently had no definite bearing upon results. In several cases where the individual devoted her entire time to the job she was more proficient. This state, however, did not require years of experience to reach.

Approximately 90 per cent of the operators were females. About 95 per cent of these were less than 25 years of age. The earnings on the average were equivalent to \$1 a week for each year of the operator's age, up to 25, viz., a nineteen-year-old operator received \$18 to \$20; while a twenty-year-old operator received \$19 to \$21, etc.

Grade and high schools each supplied about an equal portion of the operators. A few business college graduates were included. A review of the output on this basis proved that there was no definite line between operators due to education.

As a rule, the operator about 20 years of age, with one to two years experience produced more than the others. This seems to indicate that the work studied has a fascination for young people who learn quickly. If they remain on the same type of work they lose their enthusiasm, and their efficiency drops.

It is extremely important to note that the time required to operate the device is far less than the get ready and clean up time. In these two steps there is a great opportunity to improve the total volume of output. Each step involves many motions, location of accessories, paper, and other equipment, which can be more efficiently handled and arranged.

The poor condition and arrangement of data may prevent a capable operator from producing maximum results. Usually such conditions can be bettered without inconvenience or expense.

Measurement Studies. The data in the following tables represent careful compilation of individual studies made by different organizations. They can be used as a yardstick for measuring results in the particular class of work which each represents.

Output of Transcribing Machine Operators. Sixteen members submitted data. The earnings of the group average about \$25 a week. There is apparently a definite relation between output and earnings. It is important to note that the "get ready" and "clean up" times are far in excess of typing time, therefore, consideration should be given to these elements.

Output of Duplicating Machine (Gelatin Process) Operators. Practically all of the studies were made from masters typed with hectograph ink.

The age of the operators varies from sixteen to thirty-two years. The youngest is as fast as the oldest. Length of experience has no effect on output as the quickest time is taken by an operator with one year while the longest time is taken by one having about four years' experience. However, those who devote their entire time to the work show better results than those who have other duties to perform.

Output of Addressing Machine Operators. Twelve members submitted data.

OUTPUT OF TRANSCRIBING MACHINE OPERATORS

Number of characters to a line	Total number of taps	Number of lines	Number of carbons	Get ready time	Time to type a line of 50 taps			Clean up time	Age	Experience	Other duties	Familiar with dictator's speech
					Slowest	Fastest	Average					
55	1,709	39	1	43.	...	....	15.	3.	20	4	Yes	
73	78,205	1,071	1	36.	23 5	4.6	12 5	26.	20	1½	No	Yes
63	5,281	83	1	7.	11 5	8.	10.	5.	24	6	No	Yes
60	58,245	978	2	16.	22.	7.	11.	10	23	2½	Yes	Yes
57	15,279	268	2	35.	29.	8.	18.	20.	24	3	Yes	Yes
70	1,680	24	2	16	6.4	6 2	6 3	17.	27	2½	Yes	Yes
70	...	...	3	30.	10.	4.1	8.7	15	25	2	No	Yes
60	14,760	246	4	27.	12 5	6.	7 5	7 4	27	2½	Yes	Yes
60	21,600	360	1	8.	20.5	8 3	11 8	7.	19	-1	No	Yes
60	360	6	1	30	...	.	16 5	40	23	7	Yes	Yes
44	264	6	1	7.	...	...	12	4 8	20	3	No	Yes
44	14,256	324	1	28.	13	7 5	8 3	7.				
44	5,280	120	1	30	14.	10	11 8	6				
44	2,640	60	1	13			14 5	6.				
59	4,602	78	1	32	13	6	10	15.	19	2	No	Yes
68	26,520	390	1 & 2	10	17	3 6	9	6	25	2	Yes	Yes
44	9,504	216	1 & 2	15	17	7	13	8				
60	5,880	89	1 & 2	25.	12 5	11.	11 5	30	22	2	No	Yes
58	862	18	2	20				15	28	7	...	Yes
63	23,040	384	2	7.	23	4 1	12	4	19	-1	No	Yes
70	30,240	456	2	14.	7.9	2 3	5	5				
71	25,560	360	2	14	9.	3 5	5 5	6.				
69	30,702	398	2	14	16.	3 6	6.	7				
77	6,939	90	2	31.	....		13 7	15	22	3	No	Yes
75	6,802	90	2	33.	20.5	10	15 5	18				
73	6,587	90	2	29	14.5	10 5	12 5	11				
83	7,497	90	2	35	12.	9 5	10 3	12.				
79	7,171	90	2	30.	15	11 5	13 5	16				
73	6,642	90	2	28.	22 5	12	16 5	16				
64	26,492	428	2 & 3	80.	14.	3 9	7 5	90	21	3	No	Yes
60	11,880	198	3	60.	22.	13 5	17	60.				
60	11,880	198	3	30.	41 5	15	21 9	60.				
60	9,360	156	3	45.	11 5	4 1	8 5	60				
60	12,240	204	3	45.	16 5	9	12 2	60		6		
60	11,520	192	3 & 4	11.	20 5	13 5	15.	11	25	6	No	
60	12,960	216	3 & 4	75.	22.	11 5	14.	7 5	27	8	No	
60	11,160	186	3 & 4	66	19 4	13 8	17 4	66.				
60	12,240	204	3 & 4	63	19 4	13 8	16 1	63.				
60	9,000	150	3 & 4	69.	41.5	16 6	25.	69	24	6	No	
64	5,760	90	4	54.	23.	10.	17 7	126.				
60	5,400	90	4	60.	22.	10.	17 2	36				
68	19,687	348	4	30	15.	8 5	10 5	18.	21	4½	No	Yes
64	13,480	210	4	30	18.	9 5	14 5	12	22	...	No	Yes
70	23,189	330	4	34.	13.5	7.	11	10.	32	8	No	Yes

OUTPUT OF DUPLICATING MACHINE (GELATIN PROCESS) OPERATORS
Model 2

Number of studies	Number of copies made	Get ready time	Time to take off 1 copy			Clean up time	Position of operator	Size of paper used	Other duties
			Slow-est	Fast-est	Average				
17	2	9.6	13.5	3.5	7.4	11.0	Standing	11 × 17	No
19	6	53 0	20 0	10.0	14.0	15 0	Standing	8 × 11	
10	10	15 0	5.5	3.0	3.6	13.0	Both	8½ × 11	No
5	10	54 0	....	....	9.0	8.0	Standing	5 × 8	Yes
3	10	5 5	2.9	2.8	2.8	3.4	Sitting	5 × 8	No
5	15	25.0	9.0	7.5	8.3	12.0	Standing	5 × 8	Yes
2	15	12.5	....	....	3.9	9.5	Sitting	8 × 10½	Yes
7	20	27.0	6.0	4.5	5.1	....	Standing	5 × 8	Yes
2	20	12 0	....	....	3.8	11.0	Sitting	8 × 10½	Yes
13	20	77.0	13.0	10.0	11.5	....	Standing	17 × 22	Yes
2	25	90 0	12.0	9.0	10.5	23 0	Standing	8 × 10½	Yes
2	25	12.0	....	....	3.7	11.0	Sitting	8 × 10½	Yes
19	35	35.0	3.4	2.4	2.7	....	Standing	8 × 11	Yes
20	35	55.0	3.2	2.4	2.8	....	Standing	8 × 11	Yes
2	50	12.0	....	....	3.5	11.0	Sitting	8 × 10½	Yes

Model 4

8	10	37.0	6.0	4.7	5.5	6.0	Standing	8 × 10½	Yes
1	10	30.0	....	....	4.5	20 0	Standing	8 × 10½	No
1	10	30.0	....	....	4.5	20 0	Standing	8 × 10½	No
1	10	60.0	....	....	9.0	20 0	Standing	17 × 22	No
2	20	36.0	5.9	5.1	5.3	6.0	Standing	8 × 11	Yes
1	20	102.0	....	....	10 0	6.0	Standing	12 × 19	Yes
1	50	57.0	....	....	6.1	6.0	Standing	8 × 11	Yes
1	50	30.0	....	....	4.8	20 0	Standing	8 × 10½	No
1	50	30.0	....	....	4.8	20 0	Standing	8 × 10½	No
1	50	45.0	....	....	6.0	20.0	Standing	12 × 12	No
1	50	80.0	....	....	9.6	20.0	Standing	17 × 22	No

Model S 18 F, Beck Duplicator

1	10	20.0	....	....	6.0	15.0	Standing	8 × 10½	No
1	20	20.0	....	....	3.4	15.0	Standing	4 × 6	No
1	20	20.0	....	....	4.5	20.0	Standing	5 × 8	No
1	20	35.0	....	....	6.0	20.0	Standing	8 × 10½	No
1	50	30.0	....	....	5.8	18.0	Standing	8 × 10½	No

The earnings vary from \$14 to \$30 a week. The output is apparently not related to the earnings. Speed is not a matter of years of experience but rather one of adaptability. Those with one year's experience are as speedy as those with five years.

Attention is called to the time required for "get ready" and "clean up." These two elements greatly exceed the time taken for actual running of the

OUTPUT OF ADDRESSING MACHINE OPERATORS

A. Addressograph Model F 1. Ink print. Hand feed

Num-ber of plates	Num-ber of impres-sions	Get ready	Time to imprint 10 impressions			Clean up	Sex	Age	Experi-ence	Paper		Remarks
			Slowest	Fastest	Average					Kind	Size	
1. Single Impression												
2,000	1,540	27.0	15.0	9.0	11.0	11.0	F	20	1 1/4	Folder	5 X 8	
175	175	15.0	.....	.....	6.0	5.0	F	22	7	Card	5 X 8	
50	50	6.0	.....	.....	12.0	5.0	M	19	2	Sheet	3 X 6	
100	100	4.0	.....	.....	12.0	5.0	M	19	2	Sheet	3 X 6	
2	196	50.0	.....	.....	13.0	42.0	F	21	2	Env.	9 X 6	
536	536	173.0	.....	.....	17.0	96.0	F	21	2	Env.	4 X 11	
120	120	10.0	8.0	7.0	7.8	5.0	F	18	1	Sheet	8 X 16	
80	80	18.0	10.0	9.3	9.7	10.0	F	21	5	Sheet	17 X 17	
925	925	16.0	14.0	12.4	12.6	16.0	F	22	2	Card	4 X 8	
2. Two Impressions from Same Plate on One Side of Document												
120	240	10.0	7.5	6.5	7.0	5.0	F	18	1	Sheet	8 X 16	
240	480	16.0	9.2	8.8	9.0	13.0	F	21	5	Sheet	17 X 17	
1,030	2,060	21.0	9.6	9.4	9.5	18.0	F	22	2	Card	4 X 8	
3. Two Impressions from Same Plate, One on Each Side of Document												
120	420	10.0	8.5	7.7	8.1	5.0	F	18	1	Sheet	8 X 16	
240	480	21.0	9.6	9.1	9.3	12.0	F	21	5	Sheet	17 X 17	
20	40	28.0	.....	.....	10.0	7.0	F	18	1 1/4	Card	4 X 8	
1,030	2,060	21.0	9.6	9.4	9.5	17.0	F	22	2	Card	4 X 8	

B. Addressograph Model F 2. Ribbon print. Hand feed

1. Single Impressions

	120	120	16.0	12.0	11.0	11.4	9.1	F	21	2	Sheet	17 X 17
	5	5	60.0	...	...	240.0	30.0	F	22 to 43	2 to 14	Check	12 X 18
	88	88	60.0	...	...	34.0	60.0	F	22 to 43	2 to 14	Sheet	15 X 18
	1	100	60.0	...	...	60.0	120.0	F	22 to 43	2 to 14	Charts	8" dia.
	250	250	120.0	...	...	26.0	120.0	F	22 to 43	2 to 14	Env.	
	270	270	294.0	...	...	12.0	102.0	F	19	$\frac{1}{8}$	Label	2 X 4
	960	960	22.0	9.4	7.8	8.7	6.5	F	25	2	Env.	8 X 11
	1,600	1,600	640	9.7	7.6	8.6	36.0	F	25	2	Env.	8 X 11
	65	65	14.0	32.0	7.0	13.0	13.0	F	29	10	Env.	8 X 11
	4,300	4,300	360.0	...	...	36.0	180.0	F	21	$\frac{1}{8}$	Checks	8 X 17
	4,300	4,300	720.0	...	...	29.0	2,520.0	F	21	$\frac{1}{8}$	Labels	.....
	700	700	12.0	...	...	20.0	5.0	F	28	5	Card	Gum
												3 X 6

2. Two Impressions from Same Plate on One Side of Document

	50	200	60.0	...	9.7	30.0	60.0	F	22 to 43	2 to 14	Card	3 X 5
	120	240	14.0	10.5	...	10.0	10.0	F	21	20	Sheet	17 X 17
	4,300	8,600	720.0	...	...	17.0	1,440.0	F	21	$\frac{1}{8}$	Fnv.	#11
	4,300	8,600	1,080.0	...	...	15.0	3,240.0	F	21	$\frac{1}{8}$	Label	Gum
	270	540	108.0	...	...	7.5	90.0	M	19	$\frac{1}{8}$	Label	Gum
	700	1,400	12.0	...	...	20.0	5.0	F	28	5	Card	3 X 6

3. Two Impressions from Same Plate, One on Each Side of Document

	175	350	60.0	...	...	100.0	120.0	F	22 to 43	2 to 14	Proxies	8 X 11
	120	240	16.0	10.7	10.0	10.3	10.0	F	21	2	Sheets	17 X 17
	270	540	126.0	...	...	7.9	102.0	M	19	$\frac{1}{8}$	Labels	2 X 4
	4,300	8,600	900.0	...	...	15.0	2,520.0	F	21	$\frac{1}{8}$	Fnv.	#11
	4,300	8,600	2,600.0	...	...	15.0	2,600.0	F	21	$\frac{1}{8}$	Fnv.	#11

C. Addressograph Model A 4. Ribbon Print. Automatic Feed

1. Three Impressions from Same Plate on One Side of Document

	2,770	8,310	32.0	5.0	4.1	4.4	215.0	M	20	1	Bill	4 X 16
	1,566	4,707	280.0	40.0	36.0	37.0	220.0	M	21	3	..	3 X 17
	1,552	4,656	82.0	11.0	6.2	8.4	214.0	M	24	1 $\frac{1}{2}$		3 X 16

OUTPUT OF TYPISTS (INCLUDES STENOGRAPHERS)

Number of characters per line	Number of lines	Total number of taps	Number of carbons	Get ready time	Time to type a line of 50 taps			Clean up time	Sex	Age	Experience	Other duties
					Slowest	Fastest	Average					
A. From Typed Copy												
42	150	6,300	0	15.	8.	7.	7 5	3.	F	18	1	None
49	315	15,435	0	5.	11.5	6 5	7.	2.	F	20	-1	None
51	144	7,344	0	10.	8.4	7 5	8.	4.	F	20	1	Yes
62	210	12,540			10.	6	8 5		F	23	2	Yes
60	240	14,400	1	20	19.	14	16.	5	F	29	2	
63	60	3,750	2	34.	13.6	3.2	7.4	15.	F	22	2	None
60	60	1,129	0	4.	10.	7.	8.	9.	F	19	2	
60	192	11,880	0	60.	20.	8.	12.	60.	F	17	-1	Yes
12	60	747	0	1	9.	7.	8.	5	F	19	2	No
50	18	900	0	9.			10.	3.	F	21	2	No
22	30	660	0	11.	28.	10.	14	2	F	21	2	No
42	144	5,972	1 & 2	9.	23	8	11	5	F	20	2	No
50	90	4,671	1	8.	7 6	6	7 5	5	F	23	4	No
53	300	15,964	1	6.	10	9	9 5	2	F	19	2	No
50	60	3,000	1	15	11 5	11 2	11 4	6	F	21	2	No
60	120	7,200	2	19	20	10.	12 9	6.	F	20	3	Yes
60	120	7,200	2	15	8 5	7.	8.2	5	F	20	3	Yes
53	90	4,801	2	10	11 5	8	9.	7.	F	23	4	No
68	680	46,304	2	12	11.	5.	8.	6	F	20	2	No
60	24	1,138	4	33			10	15	F	24	6	
52	180	9,368	6	31	14 5	10	12.5	16	M	24	6	Yes
60	857	44,310	.....	.....	15.	8.4	11 2		F	23	1	No
60	192	11,520		9	7 5	5	6 5	8	F	19	1	Yes
53	132	6,986	1	8	14	7.	8 5	10	F	21	4	
53	132	6,986	1	6	11 5	5	6 5	4	F	18	2	
53	132	6,986	1	10	13 5	6 5	8	15	F	24	3	
B. Longhand Copy												
57	806	46,120			13	6 5	10		F	23	2	Yes
66		5,456	5	102	50	32 5	40.5	40	F	27	5	Yes
99	19	1,980	7	63			13	37	F	20	3	
C. Self Composed Letters												
70	270	18,900	1	6	21.	7	11 5	4	F	25	1	Yes
70	288	22,680	1	10.	21	3 5	8	6				
70	408	28,560	1	8.	9 5	4 7	7 5	4				
70	354	24,780	.....	7.	14	4 7	8 5	6				
70	360	25,200	2	14.	10.5	5.	8.5	7				
76	516	39,216	2	40.	14.	4 9	7.	10				
D. Shorthand Notes												
60	318	14,955	.....	.....	21.	10 5	15 5		F	22	4	Yes
60	120	7,200	1	29.	21.5	7.3	13 4	11	F	21	2	No
60	240	14,400	1	20.	19.	14.	15.	5	F	29	2	No
48	180	8,308	1	6.	11.4	7 5	8.	3	F	19	4	No
70	312	21,840	1	7.	19.	4.1	11.	3.	F	25	2	Yes
60	42	2,520	2	15.	10.	8.	8 9	10				
60	54	3,240	2	15.	8.	6 5	7 5	10				
61	318	19,398	2	17.	27.	7	11	9				
57	92	5,310	3	45.	29.	12	19.5	50	F	23	5	Yes
34	126	4,379	4	21.5	20.	13 5	14.5	12 9				
36	18	650	6	48.	.....	.....	11.5	46.	F	27	7	Yes

machine. As the machine speed is a known quantity the real saving can be made in the foregoing two elements. A study of the file cabinets in relation to the machine may provide a source of real economy.

In a few cases the get ready and clean up times are high. This is due to the number of trays pulled from and refilled in the cabinet (see tables on pages 914 and 915).

Output of Typists (Includes Stenographers). Nineteen members submitted data.

With a few exceptions the time taken for actual typing is about the same for all operators. This uniformity is in direct contrast to the variation in age, experience, and earnings. A peculiar coincidence in this group is that the age of the operator expressed in dollars is about the earnings each receives.

Output of Operators Cutting Stencils or Embossing Plates. The age of the operators ranges from seventeen to thirty-seven years. The rate of earnings is from \$14 to \$28 a week. The latter is paid to an operator who is thirty-two years old, six years of experience, and only fair in output.

There are so many variables in these studies that it is difficult to obtain fair comparisons. The copy from which the data is taken is a large factor in the time to do work.

The tabulation may be helpful as a guide.

OUTPUT OF OPERATORS CUTTING STENCILS OR EMBOSSING PLATES

Number of lines per plate	Number of studies	Average number of characters per plate	Get ready time per plate	Time to emboss or cut 10 characters			Clean up time
				Slowest	Fastest	Average	
A. Graphotype-model G-2-Power Driven							
Time is expressed in seconds							
1	10	18	1.8	5	4.4	4.8	3.
1	10	20	4.5	17.	7.5	11.	4.5
1	3	15	3.	16.	14.	15.	3.
2	10	27	1.8	7.7	4.8	6.4	2.1
2	10	30	1.8	8.	6.6	7.4	3
2	3	30	3.	.....	.....	8.4	3.6
2	10	32	3.8	18.	9.4	13.	2.8
2	3	22	3.	15.	13.	13.	3.
3	10	37	1.6	8.3	6.5	7.3	1.4
3	10	48	2.1	8.1	7.3	7.6	3.5
3	20	39	5.	11.	5.1	9.6	5.
3	3	31	3.	13.	11.	12.	3.
3	10	39	4.	18.	11.	13.	1.4
3	10	48	4.6	16.	11.	14.	3.1
4	3	58	2.6	7.4	6.9	7.2	2.
4	10	50	1.9	11.	9.8	10.	3.3
4	3	51	3.	14.	13.	14.	3.
4	10	116	2.5	15.	4.6	14.	2.
5	20	16	5.	17.	11.	14.	5.

Note: The time for embossing or cutting 10 characters includes the time for moving the carriage to position each line when more than one line is involved.

B. Graphotype-model G-3-Power Driven (Keyboard Operated)
Time is expressed in seconds

1	15	7	1.9	12.	7.1	8.6	.8
1	10	8	1.	....	....	9.9	1.
2	10	23	1.	....	....	4.3	1.
2	12	34	2.6	7.9	4.4	6.1	2.
2	20	24	2.1	8.	4.	6.8	1.3
3	4	47	2.	6.	4.9	5.8	2.
3	10	37	1.	....	....	11.	1.
4	20	50	2.1	6.8	4.2	4.3	1.
4	3	56	5.	7.1	5.6	5.7	3.3
4	20	48	5.	7.5	5.2	6.3	2.3
4	10	92	1.	....	....	6.3	1.

C. Elliott Addressing Machine-Power Driven

1	2	25	4.	12.	7.5	8.4	4.
2	3	37	5.	11.	8.	10.	4.
3	48	51	5.	13.	7.9	10.	3.
4	1	50	6.	....	....	6.	4.

MEASURING, STANDARDIZING AND COMPENSATING FOR OFFICE OPERATIONS

BY MARION A. BILLS, *Assistant Secretary, Aetna Life Insurance Company*

For many years clerical operations were considered as a by-product of the important elements of business, a necessary evil, which like an incurable disease, it was best to bear with as little thought and discussion as possible. It has long been recognized that the difference between an efficient and an inefficient sales policy could make or ruin a business. Therefore, sales policy and sales personnel have received attention. On the other side, it has been recognized that a product must be manufactured at as small a cost as possible in order to meet competition, and factory operations have been studied. The clerical force, which in most businesses constitutes a relatively small portion of the organization, has, until within the last five or six years, received relatively little attention.

The clerical worker in fiction, and many times in life, has been pictured as an effeminate individual, stoop-shouldered, near-sighted, working long hours over books and figures, of the meaning of which he knew little. Dickens with his description of Cratchit in his "Christmas Carols," gave us the picture of a clerk which has persisted through a generation.

Increase in Clerical Work. In the last ten years the exceedingly rapid growth in the number of clerical workers and the growth of many big businesses such as banks, insurance companies, and mail-order houses, where the clerical group forms a very large proportion of the workers, has led to the necessity for scientific study and a more just evaluation of clerical work.

In 1890 there were 800,000 clerical workers, according to the United States Census. In 1920 there were 2,950,000; that is, the number of clerical work-

ers increased in those thirty years three and one-half times, while the general population increased from 62,000,000 to 105,000,000 or less than twice.

This is the direct result of larger business units. In part this large increase in clerical workers stated in the census is a fictitious figure, in part a true one. For example, in a one-man store the owner keeps his own books. For the portion of time which he devotes to this, he is a clerical worker, but no census would list him as 20 per cent clerical. The business grows to five times its original size, one person's entire time is devoted to keeping the books and he is listed as a clerical worker. In this way, as long as business units are small, the number of persons classified as clerical is no index of the total amount of clerical work done. The percentage increase shown when the partially clerical job becomes wholly clerical is really fictitious. On the other hand, no one who has analyzed the matter can doubt, that the actual clerical work necessary in performing any operation, increases as the size of the business units increase. To take an example of what I mean in this connection: In practically all life insurance companies, applications on which policies have been issued are filed numerically by policy number. There are companies that have as low as 10,000 policies in force and there are companies which have over a million policies in force. Now, it is obvious that the location of a needed application is easier in a file containing 10,000 applications than in one containing a million.

Or another example: One insurance company was founded by a doctor. There is a story, based without doubt on fact, that as he made his rounds he carried in his saddle-bags application and policy forms. When he came to a likely prospect, he sold him insurance, had an application made out, then as chief underwriter and medical examiner of the company passed on the application, issued the policy, and collected the premium. Here the clerical work was reduced to a minimum. No correspondence concerning the case was necessary, no memorandum on special conditions was needed, and further information required was immediately obtained from the original source. These are extreme cases, but they illustrate at least two ways that clerical work increases with increase in volume.

No Relation between Size and Efficiency. There is, of course, an idea that an increase in the amount of business automatically and without planning will cut down the clerical cost. This idea has grown up because clerks are very seldom kept 100 per cent busy and slight increases can be absorbed without extra cost. Also decreases in volume, since they are seldom followed by an immediate decrease in the working force, usually mean an increase in cost. The average person noting this, assumes the reverse to be true. But substantial increases, unless they are counteracted by standardization and planning, mean extra clerical labor. One reason is that the number of persons who handle, or are interested in the transaction, is increased. Each must be notified and must adjust himself to that transaction. Another reason is that increase of bulk increases the difficulty of locating any particular item. That there is no automatic relation between volume and cost of operation is at least intimated by a study of the Home Office salary cost per policy in force for eight insurance companies. The author had studied each of the companies in detail and the figures given are as close as could be obtained for relative costs. The companies are listed in order of size:

Rank in Size	Rank in Efficiency
1	5
2	4
3	1
4	8
5	6
6	7
7	3
8	2

As can be seen, there is no relation between size and efficiency. The fact that in nine out of ten growing businesses some one suddenly wakes up to the fact that clerical costs are too high, illustrates how these costs can mount with an unguarded growth.

Need for Standardization. Because of this increase in clerical work with the increase in size of business units, it becomes exceedingly necessary, if unit costs are not to mount beyond reason as business grows, to introduce easier methods, to standardize practices, and to obtain from the clerical force their best efforts. These are the three lines of attack. A prerequisite to any of these lines of attack, as in fact for any scientific study, is some means of measuring the item which is to be improved, whether it is cost, speed of operation, accuracy, or any other factor. It is a fundamental law of learning that one is only able to improve when one knows whether or not each effort is successful. For example, one could never learn to play golf if one did not know after each stroke the direction and distance that the ball had been sent. We cannot improve in the management of an office unless, with the introduction of each new method, we know whether the object for which that method was installed has been accomplished. Also, we cannot expect to get the best effort from any of the workers unless they likewise know when their efforts have been successful, and here, perhaps, we must add a psychological factor—unless they realize that the success of those efforts will be in some way recognized and appreciated.

Introduction of new methods and standardization so often go hand in hand that their consideration can best be taken up together. It is often easiest, when a new problem presents itself, to consider it as an isolated case and act on it accordingly, but this is safe only if the general laws of management have become so thoroughly a part of one's subconscious self that one uses them without thought. With most of us, this is not so and we need to subject every new problem consciously to all general laws. This not only often prevents our proceeding incorrectly, but indicates the proper mode of attack. We wish to continue the discussion of method and standardization by quoting four of these familiar, but perhaps not fully recognized general laws, and by illustrating their application. We shall purposely keep the illustrations very simple, since more elaborate ones, to be clear, would involve descriptions of life and casualty insurance.

Standardization of any operation usually means that that operation can be done in a much shorter time. This is because with standardization we get a large group of operations of a similar nature brought together and an operation often repeated can usually be so methodized that it can be done in a

much shorter time than a less frequently occurring operation. However, *if a large number of exceptions creep in, the entire gain may be lost.*

The lessening cost of any operation accompanying standardization, and the immediate increase of that cost when exceptions must be made to the standard, is perhaps simply and well illustrated by an experience of the renewal department of the Aetna Life Insurance Company. This department sends out premium notices and receipts, or in the ordinary terms of business, it bills the customer. These renewals and receipts are run off on an addressograph. They are then checked with the cards having the ledger accounts between the company and the policyholder, are placed in an outlook envelope, and run through a mailometer for sealing and stamping. The total clerical salary cost of sending out the renewals last year was less than three cents per renewal. We had a criticism come in from a policyholder that we were wasting company money. This policyholder had two renewals coming due the same month. The policy numbers were widely separated, the insurance having been issued in different years. The renewals were being mailed to him in two envelopes and he felt that we were wasting postage. In order to bring these notices together, that is, to break the standardized procedure, it would be necessary to keep a tickler account, showing that in that month and on that date the two renewals were to be sorted out and put together. The clerk doing the work would then have to get the two bundles, draw out the renewals, and put them together in an envelope. Clerical time is worth about one cent a minute. We figure that the least possible time that it would take a girl to look up a tickler record, pull out the renewals, and enclose them is not less than seven minutes; that is, in order to save two cents postage we must spend seven cents to handle the case specially.

Not only must the number of possible exceptions be considered in any standardization, but often they form the solution of a case where the cost of a process after standardization has for a time decreased but has then gradually begun to increase. An illustration of this we found in our Life Application File department about a year ago. The time taken to withdraw an application from the file had been decidedly reduced. It began to go up. This would naturally result in more clerks and in increased cost. An investigation was made and it was discovered that one division was sending most of their requisitions "rush" instead of through the regular routine. The time necessary to look up a rush case is 1.225 minutes as against a routine case, where a bundle can be taken together, of .522 minutes. A little explanation and cooperation again reduced the time, by reducing the number of rush cases. This saving of a little over half a minute a case is of consequence in the average withdrawal of 2,000 applications a day.

Often a salesman or an executive who does not understand clerical procedure will ask for information which is just sufficiently different from that being regularly given out to make it necessary to handle a large number of cases specially. Sometimes this is necessary, but often an explanation of exactly what it means in minutes or better still, dollars and cents will lead to an adjustment which leaves most cases standard.

Whenever you increase the number of people handling any transaction, you increase the clerical work. This increase may, of course, be overbalanced

by the increase of efficiency on account of specialization and standardization, but it is an item which should be considered. In fact, to every company having a rapid increase in business and coming to a point where methods must be radically changed, two courses lie open. *One is standardization and specialization of the operations* so that progress from person to person is systematic and so that each operation on account of specialization is done with the greatest ease and despatch. *The other is the breaking up of the force into small independent units* each handling different cases but handling those completely. Most life insurance companies have followed the first course. One very large company has, however, except for service or machine operations, virtually become seven small companies, each handling business from a limited territory. The efficiency and cost per unit of this company is about average so it forms no special argument one way or the other but it makes one realize that the principle of small unit operations may have broader application than we generally realize.

We have, for the reason previously explained, tried to keep our illustrations simple. The first of the two following illustrations demonstrates that the extra work, created by a distribution of operations, can at times best be eliminated by decreasing the number of people handling the case.

In the New Business department of the Aetna Life Insurance Company as in every new business department, the underwriters have had to correspond with the agent on a large number of cases. There were letters to be dictated on each of these. In this work the underwriter had to dictate the letter into the ediphone, the record had to be collected, taken downstairs, transcribed, the letter checked, sent back to the underwriter, reread by him, signed, and sent out. It was found that 50 per cent of the correspondence could be covered by a form letter on which the underwriter indicated by a check the item concerning which he wished additional information from the agent. Now on half of the correspondence, the file never leaves the hands of the underwriter. He enters the agent's name, marks the information desired, signs it, and is through with the case. Our time records show that the underwriter actually spends less time on the case now than previously. Besides, time is saved that was formerly spent in getting the work to the ediphone operators, in their transcribing it, and in getting it back to the underwriter.

The second illustration is a case where standardization seemed to show the greatest field for saving. The Aetna Life Insurance Company, as do most insurance companies, carries a card which is the ledger account between the policyholder and the company. Information from this card is used by a large number of people, and any payments from or to the policyholder or other information must be written on the card. For many years the people who need information from the card got that information direct, and any one needing to write information on that card, wrote it on himself. This worked very well so long as the company was small, but as the company grew, it became too difficult to locate cards which were out of file. For example, the posting of a premium to the card from the daily accounting report from the agency takes only .642 minutes if the card is in file, but when the card is gone from the file, it may take anywhere from ten minutes to several hours to locate it. In another company, where it was decided to leave the files of the

ledger cards open, the situation became so bad that at one time they had thirteen people who were doing nothing but hunting lost cards. With the chance of the exceptional cases becoming as numerous as this would indicate, it seemed time to make some change in the mode of handling. It was decided that it was best to allow only a few people access to the cards and have the others request information from the cards or notify these what was to be posted on the card. This, of course, was actually increasing clerical operations, since requisitions and notifications must be written, but it was decided that the saving in time with the elimination of cards "out of file" would more than make up for the extra clerical work. This has proved true, since increased work has been taken on with no increase in personnel.

It is sometimes difficult to locate what the real objection to a change in method is. For example, in the Claim department of one company, thirteen people are handling each claim, and it keeps two people busy locating claims needed. However, any plan for the centralizing of these claims so that they could be more easily located, has met with strenuous opposition. The explanation was finally determined upon, but it has as yet been impossible to make a change. The claim examiners feel that they are people apart, that their time is too valuable to be devoted in any sense to routine. They are very much afraid of doing any work which is beneath them. This same feeling extends down through the department. Therefore, we have a case of each person doing only one type of thing on the claim papers, and passing them on. In some instances this Ford type of production might prove most successful but claim papers are often very complicated and thirteen people are having to study a file and get into their minds an entire group of facts in order to do in many instances a minor operation. This is most wasteful of time.

It is most helpful to have a general rule that when the comprehension of the case takes any large portion of the time of the operation, as far as possible, one individual should do all that can be done in his department as one continuous operation.

Another fundamental law that leads to interesting and often productive speculation in considering many operations is that *whenever possible, it is cheaper to check in total than to check each individual item*. Here of course, you have a chance of compensating errors but that is a thing which occurs sufficiently rarely so that one does not need to adjust an entire system on account of it. An illustration of the working of this principle we find in the *Ætna Casualty and Surety Company*. For many years the branch offices, after checking the payment of any premium on their ledger cards, notified the home office of the payment of that premium and the home office checked the premium on their ledger cards. Now the home office notifies the agent of the total amount of premiums for which they must account. The agency reports the premiums collected and shows proof of cancellations, adjustments and additions. At the end of the period, the totals must balance. The elimination of the individual checking at the home office saves about \$40,000 a year in salaries.

The comptometer versus the adding machine is an example of this. If work is to be checked back item by item, the tape machine is necessary but if two totals may be checked, the comptometer is much the faster machine.

There is a story of the country cousin who was visiting a New York business man. As they were coming up in the subway from lower New York, the New Yorker rushed his cousin out at ninety-sixth Street, crossed the platform, and got into a car. As they settled down, he said with considerable satisfaction, "There, we saved a minute by that transfer." "Yes," the country cousin said, "but what are you going to do with the minute?" The same question should be asked about every saving in clerical labor concerning which one is thinking. *There is no use of making a saving in clerical time unless one can use that time to profit.*

The possible speed of operation of any person varies over a very large range, and there is, as a rule, an automatic adjustment of our speed to the amount of work which we find ahead of us to do. For this reason, a division which seems to be, and in fact really is busy all the time, often can increase its production under pressure 40, 50 and even 70 per cent. It is a question of habit of work, and when one has formed a habit of working slowly, it is very difficult to speed up. On the other hand, if one forms a habit of working rapidly, one does much more work with no more strain. This is true for routine clerical jobs and for the more technical or executive jobs. Nothing is more pernicious than the habit of slow work. Therefore, a decrease in the amount of work to be done, unless it is taken advantage of, may actually defeat its own purpose by causing an undesirable habit of work.

If a division does not have enough work to do, or if that work is exceedingly spotty, it is very essential that something be done so that the people work rapidly while they work, even though there are long periods when they do nothing at all. The only way that we have found it possible to keep up speed of operation during slack periods is by some type of measurement and payment for efficiency on a basis of the work turned out in a given time, and a definite allowance which does not penalize the individual for the time during office hours in which there was no work for him to do.

Of course, working rapidly while one works and having free time which is clearly and definitely so labeled, has another advantage to management. It shows clearly the basis on which any supervisor can work in estimating the amount of work which his department can handle, and preparing for it. In other words, surplus time then becomes a visible asset on which one can definitely plan. If the clerical forces are working slowly, the surplus time is a concealed and unknown asset concerning which the supervisor can only guess. Under these conditions the supervisor usually guesses incorrectly the actual surplus time available, and invariably underestimates the capability of his division.

It is usually much easier to take advantage of surplus time made available by any change in method, standardization or conscious increase of effort in a medium or large department than in a small one. Of course, taking advantage of surplus time is usually easiest when several people are doing the same work but though it takes a little more planning, it is usually possible with surplus time involving several jobs so to join the operation that a reduction in personnel and cost can be made. There are other arguments for the larger units such as full time supervision which we will discuss later, but flexibility of clerical force plays an important part.

Obtaining the Best Clerical Effort. The best methods fail if the workers are ineffective; therefore the second phase of office management, getting the best effort from the clerical workers, is as important if not more so than the first, standardization.

The first two steps in this, the proper selection and training of persons for the work, are studies in themselves and cannot be discussed here. The third step is the offering of proper incentives to the employees for their best efforts. This is a problem because the direct incentives for economic management have largely disappeared in the big businesses of today. The shoe-makers of a generation ago who made and sold their own shoes had their incentive to keep quality up and expense down constantly at hand, since if they did not give proper quality at a reasonable rate, people would not buy their shoes and unless they sold at a profit, they could not live. Today the person recording the sale of those shoes receives a fixed salary and the week to week salary does not directly depend on the profit made in the shoes. Of course, if the clerical worker looked far enough ahead, he would see that to have the business and his own job continue, the shoes must be sold and the accounts kept at a cost which leaves a profit but this is very vague and usually entirely out of the control of the person doing the individual job. Also, if a definite profit is made in the business, the individual doing the job is not at all sure of profiting directly by this increased profit of the company. Realizing this difficulty, many companies have adopted profit sharing plans. As a rule, however, these profit sharing plans have not allowed the individual worker, whose idea of business administration is of course meager, a means of definitely relating his own work to the profit which he receives. Therefore, his incentive for lessening expense is too vague to be wholly successful. If we are to get back in large businesses the real incentive that we have in the smaller units, we must connect directly the saving of expense and the remuneration of the individual. That is, the pay of the individual must vary as nearly directly as is practicable with the kind of work, the quantity of work and the quality of work done.

It is surprising how little any of these items were taken into consideration thirty years ago and even up to within the last ten years. We smile now when we talk about the regular annual increase, regardless of kind of job or efficiency but in practically every large clerical group during those years executives were giving small annual increases to every clerical employee who was not sufficiently inefficient to be asked to resign. One only needs to go over the pay roll of a number of large companies of long standing and discuss the various people with any officer understanding their jobs, to find innumerable cases where people are still doing the simplest routine work and have been doing it ever since they came with the company but whose salaries have grown by small increases so that they are paid, two, three and even four times what the job that they are doing is worth. A study made by three companies of the careers of all of the people who were on their payroll in 1908 indicates that about 50 per cent are still employed by the companies and that 30 per cent of the 50 per cent are receiving salaries which greatly exceed the maximum for the job which they are doing.

Classification of Jobs. The first step in advance perhaps came when people started to differentiate between types of clerical work and name them, and a really big step came when people began to realize that these general terms did not always designate the type of work done by the individual. For example, we have the much misused term of "bookkeeper." In different companies we find bookkeepers who are simply posting clerks, a job which they could learn in a few weeks, and bookkeepers who need to be expert accountants. It was then an easy step to the realization that the kind of work can be determined by a job analysis and job classification. Gradually it is being recognized that clerical work falls into the same classes regardless of the business involved; therefore, experience on classification is being rapidly collected.

Classification of jobs, of course, includes the resultant idea of the setting of salary limits for each class of work. The general principle is that we have for any class of work a minimum wage below which it is not fair to pay the clerk and a maximum wage above which we cannot afford to pay, no matter how well the work is done. That is, the kind of work sets the minimum and maximum salary to be received. The quantity and quality of the work done should determine the individual's position between this minimum and maximum. This is often the more difficult problem of the two to meet, although it does not, of course, involve large chances of injustice of payment. In order to meet this problem of determining the individual's position between the minimum and maximum, a large number of rating scales have been devised. Most of these rating scales are considerably better than nothing but no one of them has proved entirely satisfactory or probably ever will, since all are based for the most part on the personal opinion of the supervisor unsupported by actual records. Here we come back again to the thought which we have emphasized so many times, that if we can find some means of actual measurement of this quality and quantity of work done, we shall have a far more satisfactory method of salary adjustment than by any rating scale. Experience with actual measurement has shown us that even though we do not have a measurement which is 100 per cent perfect, we still obtain by means of these measurements, outstanding results in fairness of salary administration. If we add to this, pay on the basis of work done, we have a strong incentive for continuous and quantity production.

In our own classification, we have differentiated between two types of work—first, supervisory work, second, personal work. We make arrangements so that a person doing both supervisory and personal work shall be rated according to the higher class but we are convinced that the best management demands that units and divisions be made of sufficient size that a supervisor can devote the major part of his time to supervision. We believe that this is a correct principle for two reasons: First, *the person doing personal and supervisory work will in nine cases out of ten neglect supervision for personal work* and this is true no matter how much you may emphasize the importance of supervision. There are various reasons for it, most of them probably subconscious. For example, there is no one on whom he can lay the blame if the personal work is not done correctly and there are various other people he can blame if the supervisory work is not effective. Also, one always seems

to be busier when doing personal work, than when supervising, and most people like the feeling of being busy. Second, *approaches to the two kinds of work are quite different, and do not as a rule fit into each other.* Probably all of you can recall cases of people who have seriously overworked themselves trying to do the work of a whole section instead of seeing that the other people in the section did the work. The supervisor of the small group is very likely to be the person who has grown up in the work and has the viewpoint. When the job includes no personal work you eliminate the possibility of this. Third, the mind of the supervisor should be free so that he not only can see that the present work is going through satisfactorily but also can look for improvements in methods of operation, efficiency and cooperative services rendered to other divisions.

Importance of Measurement. Obtaining the best efforts from both the supervisor and personal worker depends on the same items. They are a knowledge of exactly what they are doing and how they are improving, a just appreciation of the improvements and an opportunity to make further improvement. One of the best things that can be done for any supervisor and which will give him a strong incentive for improvement if he is progressive, is to establish for him some fair unit of measure of the work of his division. It is not particularly difficult to find this unit for practically any division, as it does not have to be an exact unit but can be a unit with which other units vary. For example, with the renewal or billing department, it may be the number of renewals or bills sent out. This naturally does not take into consideration changes and corrections made but since they vary fairly consistently with the number of bills, it is permissible to select it as a measure. The supervisor should either be able to reckon this figure himself each month or should have it given to him with all the necessary data. Besides that, he should be made to feel that proper emphasis is placed on his record and proper appreciation shown. He should likewise know and agree to the job analysis and resultant classification of all the people under him, so that he can discuss their salaries with them intelligently and give them incentives for taking on more responsibility.

For the individual worker or personal worker, the measurement of their work and a money incentive to improve that work will often produce almost miraculous results, even after good supervision is apparently getting excellent results. Very often several changes are made at once and therefore it is difficult to isolate the effect of improved supervision, measurement of work and payment for production. We happen, however, to have had one division where these different modes of incentives were tried out, one after the other, and where we can, therefore, note their successive effects. In a small section of the Ætna Casualty and Surety Company, certain ledger cards are typed. Our first records show that these were being typed at the average rate of five an hour. The supervision was changed and with a little urge the operators went up to an average of nine an hour. Then individual records were begun which went to the officer in charge each month and pride was appealed to as well as the incentive of the knowledge that on the basis of the work, there would be yearly an adjustment of salary. The average number typed went up to twelve an hour. At this point an actual time study was made of the

operation and a bonus put on the work. Within a few months the production went to twenty-eight an hour with the same percentage of errors as previously. Half of the force were transferred, and those left are earning a bonus of between \$15 and \$20 a month which, on the salary paid for routine typists, is a very fair percentage.

While this illustration has been specially quoted because it shows the individual steps, the final result is not at all out of the ordinary. To obtain results, however, two items, as we have emphasized, are essential—good supervision and accurate measurement. While some supervisors of long standing resent any suggestion that the efficiency of their division could be improved by measurement of the work done, practically all of the younger and more progressive ones feel that such measurement gives them a chance to show what can be done and an assurance that when it is done, it will be appreciated. They also feel that it gives them a chance to justly estimate the amount of output which each of the employees whom they are supervising should be able to produce and therefore gives them a chance to more justly recompense those individuals.

A practical illustration carries out the principles which we have discussed here. For this I will take two divisions in the Aetna Life Insurance Company, the Renewal and Accounting. These two divisions have been chosen for general illustrations several times because their functions are more easily understood by an outsider than the functions of the technical departments of insurance. The functions are in general terms, the billing of our policyholders and the accounting for the premiums received. In 1924–1925 a complete analysis of these departments was made. Job descriptions were written up for all jobs involved and the relation of these jobs to the seventy agencies distributed throughout the United States were studied. At the end of the survey there were two young and very progressive supervisors in charge, men who knew the work thoroughly as it was being done but who were on the lookout for improvement. Nine-tenths of the success of the two divisions is due to their work. A rough unit of measure was worked out for the work of the division. This unit was the number of bills or renewals sent out. It was then considered by the supervisors with the idea of reducing this cost per renewal. An entirely new addressograph system was installed and a change made in the number of reports sent in from the agency and in the responsibility of handling these when they reached the home office. Besides that, the jobs were classified according to the classification which has been used throughout the company and several other large companies. In March, 1926, at the time that the work was definitely taken over, there were 114 people in these departments, with an average yearly salary of \$1,067. Today there are sixty-six people in this group with an average salary of \$1,368 plus an average bonus based on production per person of \$139, making a total of \$1,507. The number of items handled has meanwhile increased 90 per cent.

The decrease in cost has been made, first by a *change in method*; second, by *classification of jobs* so that increases in salary were granted on a more scientific basis and persons who were over the maximum of their jobs were not allowed further increases; third, by *setting up a budget* which the super-

visors kept constantly before them; and fourth, by a *measurement* for individual workers and the payment to them of a *bonus based on their production*.

In analyzing results of this kind, it is very difficult, of course, to say what proportion is due to any one of the various factors. Such results certainly would not have been accomplished without excellent supervision. The fact that there was a definite measure of successful operation gave these supervisors an added incentive for this work. A realization on the part of the workers that an attempt was being made to evaluate their jobs properly, gave them an incentive for knowing the work and a willingness to take over further responsibility. A definite study and payment for output of the individual worker, which really means an immediate recognition of his reduction of expense of the operation aided in this reduction in cost, a reduction which on a salary basis amounts to \$21,176 yearly. When we consider this, with the decrease in overhead due to the decrease in people, and take into consideration also the 90 per cent increase in production, we find the saving amounts to a very sizable figure. Expressing it another way, there has been a decrease in cost per renewal of more than $4\frac{1}{2}$ cents which, since there were slightly over a million renewals sent out last year, means a large saving.

Training Supervisors to Think in Terms of Cost. Measurement will often achieve another result which is sometimes difficult to get in any other way. In most companies that have had large forces for some time, the supervisors have grown up in a régime that gauged the importance of the job by the number of people supervised rather than by the kind and quantity of work produced. It is very difficult to teach supervisors trained in this school the idea that when they reduce their force for any reason whatsoever, they are not actually reducing their own importance. It is easy to see how such an idea developed. The craftsman of few generations ago could gauge his success by the number of fellow-craftsmen who gathered around him and the number of apprentices he had. The biographers of Benvenuto Cellini boast of the number of metal workers trained by him. Josiah Wedgewood spoke with gratification of the numbers who came to be instructed and the paternal factory owner of a generation ago pointed with pride to the numbers dependent on him. The importance of cost did not need to be emphasized with these men because under kingly patronage, they did not need to consider it, and as owners it was brought forcefully to them.

This prevalent idea of preceding generations together with the fact that most men like the feeling of power over their fellows made it very easy to build up the assurance of high correlation between the number supervised and the importance of the job. The very stability of the job of the office worker and the fact that there was no immediate relation between his income and the profit and loss of the business, has helped to cement this idea more firmly. To get these supervisors to think in terms of cost instead of people is a long, slow job. Sometimes the cost figures which they are asked to work out every month for themselves and which are regularly discussed or which are worked out by some other person and given to them with all details, will at last gain their interest. In exactly the same way a classification of jobs which is explained and insisted upon each time that the salaries of their employees are considered, will get them to thinking more in terms of the ability of their

personnel and the actual kind and amount of work accomplished, than in terms of length of service and the personal financial needs of the man. Often after a job classification and a rating has been in force for some time one finds the supervisor making a conscious analysis of the personnel of his department, which he would not have thought of doing previously.

The value of these older supervisors with years of experience behind them, when they begin to think in terms of progressive management cannot be overestimated. They have a first-hand experience gained through close contact with the job which can never be replaced by short-time studies. It is in the end really the supervisor who makes any system effective. Therefore, any time spent in inbuing him with new ideas and studying his constructive criticism of them is apt to be exceedingly productive of lasting results.

CHAPTER VI

OFFICE SERVICES

BY EDITH KING DONALD, *Editor, American Management Association*

Whether office services such as filing, mailing and messenger work, duplicating, stenography, and computation should be centralized or decentralized will be determined by the size and nature of the operations to be performed. When a survey determines that the sum total of a certain class of decentralized work will not justify the existence of a separate service department it will then be more economical to let that operation remain in its existing locations. Considerable savings are possible through centralization, but convenience and the confidential nature of some work argue for decentralization.

Factors Determining Specialization. Some of the factors which determine the need for specialization or separate service departments are:¹

1. What is the volume of work of a certain operation such as typing? It is not desirable to create a department if a total of only ten or fifteen hours of the special work is being done each day by five or six secretaries.

2. What degree of specialization or amount of training is required to do the work?

3. What type of help is available in the departments requiring special service? For example, if it is found that several high-salaried men are doing calculating operations or are tabulating certain data or are making maps, etc., and there is enough of the work to keep several clerks busy, it may be more economical to organize a clerical unit to do the work.

4. Are the working conditions conducive to doing the special operation? It may not be advisable to furnish the desired heat or quiet condition in the operating department, which factors are needed for efficient production of the specialists.

5. Is the supervision in line departments adequate?

Special supervision, even for a few clerks, may be more economical. The line executive and his assistants may be fully qualified for carrying on the major function but very poorly qualified to supervise, or even give general direction to the carrying on of a special operation.

When certain work such as filing, typing, etc., is for good cause centralized, these operations may with a degree of satisfaction be brought under operating standards by detailed job analysis, establishment of written routine, and scheduling of the work of the individual. Departmental supervision as well as periodical staff checkup will be necessary to keep the standards

¹ Adapted from I. O. ROYSE, "Organization for Office Services," American Management Association, 1931.

effective. Past production records cannot be considered adequate for comparison and as a basis for operating standards.

If centralized work is done by as many as twenty to thirty clerks in each department, an attractive saving should certainly result over the decentralized plan. The advantage of centralization comes from close supervision, possible standardization, measurement, scheduling, incentives, development of a highly skilled group by careful selection, assignment, and training, etc. Cases are on record wherein centralizing the secretarial activities into a transcription department using business phonographs has reduced the original force by one-half, has reduced the amount of equipment, increased production considerably, and released a very substantial amount of valuable floor space.

The effect on overhead is greatly influenced by the type of supervisor available. A good supervisor should be able to control two or even three different service groups, performing different functions. This, together with the other savings resulting from centralization tends to decrease rather than increase overhead expense.

Safeguards on Centralized Service. To guard against excessive and unnecessary requests for office service, the following will help:

1. There should be a definite understanding concerning the services offered.
2. Service department heads should be clearly instructed concerning the type of work to accept.
3. There should be a director of all office services.
4. A cost system should be established and the departments serviced should be charged for the work done. If there is a proper budget system this is usually very effective in eliminating useless requests.
5. Periodically check work should be done in the major departments such as sales, accounting, production, etc. to determine the load carried by the employees in the departments.
6. The work in all departments should be analyzed and scheduled and there should be a definite understanding that only certain specified work be passed from each department to the service groups.
7. In cases of questionable jobs being assigned to service groups, the work should clear through the service director for analysis, decision and, if accepted, assignment.

The Supervisor of Office Services. One person should have supervision over service units. It will be an exceptional organization that can have service units operate long, efficiently and harmoniously under two or more line executives. Theoretically the executive in charge of service units should report to the general manager, president, or a senior executive who is in general charge of the line executives who have departments requesting work from the service groups.

The supervisor of office services, sometimes called "office manager," should have line control over only those employees who are working in the service units in his charge and not over employees who are perhaps doing similar work in the major operating departments. At the same time the office service supervisor may exercise a research function in simplifying and standardizing clerical work. This is sometimes found in medium sized

offices which do not have sufficient volume of such work to warrant the establishment of a central planning or research department. In such cases the office service supervisor acts in a staff capacity in relation to the supervisors of the other departments. He may suggest methods and standards of work for employees not under his direct control, but is not responsible for the discipline or output of such employees.

In many small offices the clerical work incident to the major functions of finance, accounting, sales, production and personnel is centralized under an office manager. Insofar as the volume of work will permit such an arrangement, it may be effective. If any or all of these activities grow to the point where separate departments are necessary, difficulties may arise through the implications in the title office manager. A clear definition of function and assignment of authority in such a way as to avoid cross currents of authority and division of responsibility is necessary in order to avoid the ructions and delays that may be caused by anomalous titles.

Danger of Overcentralizing. It is easily possible to overcentralize services. If proper budgetary, cost, or supervisory control does not exist there may be danger of line departments passing work to centralized service departments to reduce their own expenses or to avoid the trouble of caring for the work in the line department. In the well organized and controlled office there will be in existence the proper planning, scheduling, and control to determine very closely the conditions under which there should be centralized service departments and there will also be a continual check to avoid abuses as well as to encourage proper use of the service units that it is found advisable to have.

Advantages and Disadvantages of Centralized Service. Some of the advantages of central office service departments are:

1. Peak loads may be more easily handled.
2. Supervision may be more adequate.
3. Expert advice from highly trained supervisors is available concerning methods.
4. Higher production will usually be attained at a lower cost per unit of work.
5. Standards may be established and more easily enforced.
6. Greater facility leads to convenience in many cases such as in finding correspondence.
7. Better rating of clerks and often better remuneration is possible.
8. Better and more uniform work should on the average be turned out.
9. Greater flexibility exists in rotating workers during vacation and sickness.
10. There is usually a reduction in investment on account of less machinery being used and decreased floor space, etc.
11. Output is often increased by possible economic use of machinery which would not otherwise be economical.
12. Service departments are often very good training departments to provide highly efficient help for other departments.

Disadvantages of centralization which must be overcome in building successful service departments are:

1. Lack of knowledge of the purpose and use of the clerical work done may remove the interest or incentive for speed and accuracy from the service worker.

2. Work may be so involved and irregular that errors and explanations prohibit centralization.

3. An organization may be so constituted that each major activity is separate from any other and quick access to records so desirable that centralization is not practicable.

4. Interdepartmental service such as messenger service, must not lag in the face of the greater burden due to centralization.

5. Extra forms or reports necessary to insure proper control of services rendered should be kept as simple as possible.

It will be readily seen that careful selection and standardization of equipment will make for flexibility of operation, whether or not the work is all done in one locality. This is especially true of typewriters and filing equipment, and only less so of other types of machines and furniture.

Filing. The character of the business, or nature of departmental work in an organization will determine the system of filing which will best safeguard and quickly produce the material to be saved. Most general correspondence can be kept alphabetically, but because of their nature some papers are best filed numerically, geographically, by subject, by date, by a combination of number and letter, by commodity, port, or steamer, etc.

The use of color in forms, records, and in carbon copies of letters helps to make part of the sorting automatic. Colored labels on the guides in the file drawers to designate various divisions will also save time and mental effort.

An alphabetical file is economical because of its simplicity. It is operated without an index by separating correspondence into folders labeled with initial letters. Growth will bring problems in filing alphabetically. The main thing is to anticipate them in so far as possible by studying the expansion of the activities causing this increase in correspondence and by adopting arbitrary subdivisions of the alphabet and sticking to them.

Sometimes the size and variety of correspondence necessitates filing by subject with a numerical index. In this case the material may be divided into related groups, each group being given a number and subsidiary groups designated by a related decimal number, or number and letter classification. Two aids to classification are the Dewey Decimal Classification¹ and the Cutter Table.² The former was designed for general library use and those who are concerned with classification of business subjects may profit by making their own adaptation based on the decimal principle. The Cutter Table is a chart providing for expansion through the use of the letters of the alphabet plus numbers.

A basic classification of subjects occurring in a manufacturing business is:

¹ DEWEY, MELVIL, "Decimal Classification," Forest Press, Lake Placid Club, New York.

² CUTTER, C. A.: "C. A. Cutter's Three-figure Alphabetic-order Table," Northampton, Mass.

- A: Accounts and finance.
- E: Employees.
- G: Executive (general).
- L: Legal matters.
- M: Product (manufactures).
- P: Plant.
- R: Reports and statistics.
- S: Sales.
- T: Traffic matters and purchases.

Each of these main groups may be subdivided indefinitely through the use of additional numerals and letters. An alphabetical card catalog composed of cross references to these groups will help to locate material which is called for by people who think of the same material from varying angles.

The primary detail of classification under "Accounts & finance," "Employees," "Executive," "Product," and "Plant" is given below. This classification is in use in the manufacturing department of a large company. It has been developed on the principle of reference to an object rather than a function. The personnel who do the filing are able to grasp names of things, when functions would probably be beyond them. It will be noted that room for expansion between subjects has been provided.

- A: Accounts and finance.
 - A 5: Appropriations.
 - A10: Audits and inspections.
 - A15: Banks and currency.
 - A15B: Bank balances.
 - A15C: Cash.
 - A15N: Negotiable instruments.
 - A20: Bookkeeping.
 - A25: Classifications, accounting.
 - A30: Costs.
 - A35: Credit and collections.
 - A40: Depreciation.
 - A45: Expense and budget.
 - A55: Investment.
 - A60: Invoices and bills.
 - A65: Journal entries.
 - A75: Loadings.
 - A80: Transfers (accounting).
 - A85: Working balances and expenditures.
- E: Employees (personnel).
 - E 5: Accidents.
 - E10: Employment.
 - E13: Occupational classification.
 - E15: Performance.
 - E20: Service to.
 - E25: Thrift.
 - E30: Training and educational.
 - E35: Trips.
 - E40: Pay roll matters.
 - E45: Working force.
 - E50: Works' club.

- G. Executive (general administrative matters and subjects not otherwise classified).
 - G 5: Addresses and talks.
 - G10: Associations, societies, clubs, and institutions (other than employee clubs).
 - G12: Clerical inspections (general).
 - G15: Committees.
 - G20: Conferences, conventions, and meetings.
 - G25: Contributions and donations.
 - G30: Insurance (all, other than employees').
 - G35: Office service (include service only; correspondence on equipment should be filed under equipment affected).
 - G40: Organization.
 - G45: Relations with other companies.
 - G50: Publications.
 - G55: Publicity and advertising.
 - G58: Records and forms (include only those which cannot be otherwise classified).
 - G60: Routines (include only those which cannot be otherwise classified).
 - G65: Rules and regulations (company only).
 - G70: Suggestion systems.
- M: Product (manufactures).
 - M 5: Engineering and drafting (general).
 - M10: Manufacturing methods (general).
 - M15: Inspection (general).
 - M20: Production (general).
 - M25: Raw material and supplies (includes all supplies) (list A to Z).
 - M50: Manufactured merchandise (A to Z).
- P: Plant.
 - P 5: General subjects.
 - P10: Buildings (A to Z or numerically).
 - P15: Building areas (include equipment special to these areas) (list A to Z).
 - P20: Building construction.
 - P25: Floor space.
 - P30: Equipment.
 - P40: Grounds (include improvements such as fences, pavements, etc.).
 - P50: Passes and badges.
 - P60: Service (general) (does not include any systems shown under P30R).

Standardization through a Manual. As in every other phase of management a filing system to be effectively used must be adapted to the particular organization which it is to serve. After a system has been planned with reference to the activities of the business a manual describing it and giving rules for its maintenance will be found of inestimable value. A work routine describing filing done in one department and taken from the manual of procedure of the filing section of a large bank is given here as a sample of how standard practice may be developed and maintained.

DESCRIPTION OF FUNCTIONS

- I. Collection and preparation of mail for files.
 - A. Mail is gathered once or twice daily from the desks of the credit and business extension men.

B. This mail is reviewed by the head of the filing section to see if it is ready for filing. This is indicated by a round office-and-department stamp, and the initials of the person sending such material to the files. It is also checked with colored pencil at the name of the person or firm under which the paper is to be filed.

1. Credit mail is then passed directly on to the respective clerks for sorting and filing.
2. Business extension mail is also scanned for the following, before it is sorted and filed:
 - a. Changes of address.
 - b. Changes of firm name, consolidations, and mergers, etc.
 - c. Changes of department records (to another account, etc.).
 - d. Special interest accounts.
 - e. Note of official acquaintances.
 - f. New officers, and resignations of old officers.

All of this information is transmitted to the departments which would be interested.

g. "Fin" written across the upper-right corner of the letter or report, which, in business extension mail, is necessary (in addition to the stamp) to indicate readiness for filing.

h. Pencilled initials and a follow-up date, indicating that a follow-up card must be written for the paper and filed in the date file.

II. Sorting and filing mail.

A. Mail for each division is "thrown" (or sorted) into alphabetical order in a sorting tub.

B. Sorted mail is taken from the tub, arranged in strict alphabetic order, and further divided for each correspondent according to class and date. It is then ready for filing.

C. Filing entails fastening the new material in the proper date order in the correct division of the folder.

III. Types of material filed; material filed in credit and business extension folders comprises the following:

A. Credit material:

1. Financial statements of the firm.
2. Comparative statement (of financial condition) form.
3. General correspondence of credit value (largely with the subject).
4. Agency credit reports.
5. Newspaper clippings (of both credit and business extension value).
6. Open and closed account slips.
7. A "General Information" sheet.
8. Typed record (usually a "pink sheet") of lines established, and loaning officers' decisions.
9. Overdraft sheets.
10. Typed "information" sheets, upon which are entered summaries of interviews with and investigations of the subject, by credit investigators.
11. Offering tickets or slips.
12. Carbons of answers to incoming credit inquiries, or typed extracts of these.
13. "Verbal inquiry" sheet, noting inquirers and dates of inquiry.

B. Business extension material:

1. Notes of changes of address, and mailing list change slips.
2. General correspondence of business extension value.
3. Reports, interviews, etc., written up by field men and other business extension representatives.
4. Official acquaintance sheet, noting any acquaintance of the bank personnel with the subject.

IV. Sequence of folders in file.

- A. For banking offices, handling only a small amount of out-of-town and foreign mail, geographic divisions are unnecessary, and an alphabetic plan of folder sequence is best.
- B. For banking offices handling large amounts of out-of-town or foreign business, territorial divisions are important, and a geographic plan of folder sequence is best. In that case the material is thrown into geographic order at its first sorting.

V. Preparation of folders; individual folders are made up for every borrowing account, in the larger offices, for every account. There the procedure is:

- A. Reports of new accounts from the new accounts desk are listed upon the new account sheets (see VIII).
- B. The sheet is checked against the index.
- C. If there is no card in the index file, a folder and an index card (see VII) are prepared for the account.
- D. If there is a card marked "closed" for any of these names, it indicates that this account is a reopened, not a new, account. In this instance the card is drawn and changed and the folder is also drawn and its contents transferred to a new red-rope (account) folder.

(Individual folders are also made up for non-accounts, when there is material of any volume for one name. Miscellaneous folders are maintained to care for a few sheets of material for one name which is not an account of the office. Such small units are filed in alphabetical order within the folder.)

VI. Records of folders loaned.

- A. A requisition is made out by the borrower, in the larger offices, for every folder taken from file.
- B. "Out" folders or cards, written from the requisitions where requisitions are used, or as the sole record in a smaller office, are filed in place of all folders loaned.
- C. The requisitions are kept behind date guides in the same order as are the folders they represent.
- D. Each day the requisitions which have been outstanding for a week or more are checked against the files to ascertain whether the folder has been returned. If the file is missing, inquiry is made of the borrower as to whether it is still needed. Wherever the folder cannot be relinquished, notation is made on the requisition, which is then returned to the outstanding file. In offices where requisitions are not used, the out cards in the files are reviewed for note of overdue material, and, where it is found that any letters or folders have been out too long, inquiries are made.
- E. If the material is transferred from one borrower to another, a notice is sent to the filing section by the original borrower.
- F. When returned to the section, each folder is checked through before replacement in file. When it replaces its outfolder in the

file drawer, the out folder is gathered up with others, to cancel the requisition slips.

- G. It is advantageous, wherever practicable, to loan folders upon a single work-day basis, so that they will be returned to the filing section at the end of each day even though some of them must be reallocated to the same people on the following morning.

VII. Index to credit files.

A check list against the files is kept on cards (three by five inches), blue cards being used for customers and white cards for non-customers. This index shows:

- A. All names in file (accounts, non-accounts and material in miscellaneous folders).
- B. Changes of name, affiliations, etc.
- C. The location of material in the files.
- D. Material transferred to other offices.
- E. Material sent to storage.

The "new account sheet" is authority for changes and additions to the index, in the offices using this record.

VIII. Preparation of new account sheets.

Items for new account sheets, typed in this unit, are received daily and consist of:

- A. List of new accounts, from new accounts desk.
- B. Lists of closed accounts from head bookkeeper.
- C. Changes from:
 - 1. Field men's reports, letters, etc.
 - 2. Newspaper and magazine clippings, letters, etc., in which case the information is verified before it is entered.

IX. Average balance and loan cards.

- A. At the end of each month the depositors' bookkeeping department enters average balances upon average balance and loan cards.
- B. At the beginning of each month members of the credit and loan and discount departments make notations of loans upon these cards.
- C. The cards are then refiled in alphabetical order in a card file in the credit and business extension filing unit.
- D. These cards are withdrawn in the same manner as credit folders, and by the same officers or employees who are permitted to withdraw folders from the file.

X. Follow-up work for business extension division

A follow-up system is maintained for the benefit of the business extension division, but not for the credit department.

- A. Each morning, follow-up cards due that day are removed from the follow-up file, and then arranged in the same order as the files they represent.
- B. The folder corresponding to each card is taken from file. If not found in file, it is secured from the borrower to whom it is charged.
- C. These folders are grouped according to the individual requiring them, and placed on his desk.
- D. Out folders are then written up for, and filed in place of, folders given out. The corresponding follow-up cards are filed in the requisition slip file, under date.

XI. Records of transferred and closed accounts.

- A. Records pertaining to accounts transferred to other offices, and to closed accounts, are changed in accordance with the notations appearing on new account sheet, and are transcribed upon:

1. Index cards.
 2. Average balance and loan cards.
 3. Folder covers.
 - B. Folders stamped "closed" are returned to their respective places in file.
 - C. Folders representing transferred accounts are forwarded to the office to which the accounts have been transferred.
- XII. Storing of old records.**
- A. Once a year closed accounts and material in miscellaneous folders are submitted to the main users, the credit men, to be reviewed for transfer.
 - B. Transfer of material to storage is recorded upon the index cards.
 - C. Whenever shipment of records to the central warehouse is contemplated, (and, if possible, before the shipment is packed) the coordinator of files, general coordinating office, is notified.
- XIII. Records of work performed.**
- A. Daily record is maintained of the aggregate number of letters filed. The count is made as the mail is sorted and checked each day.
 - B. Requisitions for folders borrowed the previous day are counted and recorded each morning.
 - C. These records are summed up weekly and monthly in the form of reports, noting work done for each department.
 - D. A "control" record is maintained daily, reporting requests filed, those unfilled for known reasons, and those unfilled for unknown reasons.

Eliminating dead material from the filing cabinets by storing in transfer cases is necessary in order to save space and keep the files efficient and active. Transferring may be done periodically or continuously, as time beyond the current work will allow. The cost of storage space will necessitate a definite policy covering the destruction of dead records. Some material should be kept indefinitely while other records will have outlived their usefulness in a year or less.

The tickler or calendar file is operated by a series of guides labeled with the months of the year and days of the month. This file will automatically bring up matters which should receive attention at a particular time. In order to observe the principle that the general file should at all times be complete, a memorandum of the matter to be attended to may be inserted in the tickler.

For those firms who must file large numbers of documents by names which may sound alike but vary in spelling the Russell-Soundex system has been devised. This scheme groups all names phonetically, thus obviating a lengthy search for a name with unusual spelling.

A detailed and comprehensive treatment of filing is found in "Filing Department Operation and Control" by E. E. Scholfield. A simple and elementary text is "Filing Methods," by E. Wallace.¹

Combining Mail and Filing Departments. In some companies it seems practical to handle the mail and filing in the same department. The following

¹ Ronald Press Company, New York.

outline of operations in such a department will suggest how the work may be scheduled. It will be noticed that in this particular company the indexing of articles in technical magazines is also done in this department. This would ordinarily be handled by the company library.

FILE AND INCOMING MAIL DEPARTMENT OF A CHEMICAL COMPANY

1. Opening, routing, and delivery of incoming mail. 8:00, 9:30, 11:00 a.m.; 12:00, 2:00, 4:30 p.m.
2. Delivery of tickler correspondence. 9:00 a.m.
3. Coding of customers' correspondence and indexing of subject correspondence including making of cross references. 9:00 a.m. to 5:00 p.m.
4. Filing of coded and indexed correspondence. 9:00 a.m. to 5:00 p.m.
5. Answering requests on file department.
 - a. In person.
 - b. By telephone.
 - c. At a stated period, i.e., between 12 and 2. Letters which required answer sent to file department by sales correspondents.
6. Collections of correspondence. 11:00 a.m., 2:00; 4:30 p.m.
7. Typing of folders and labels.
8. Transferring at end of year.

Folders for large accounts made up ahead of time.
9. Indexing of articles in technical magazines. Index by subject and title on three by five inch cards which were filed in alphabetic order.
10. Semiannual reports on volume of work handled.

Mail. The effective handling of mail requires manual skill and considerable economy of time and effort is possible in the proper organization of this work. In the case of circularizing, or a large volume of ordinary mail, careful scheduling, attention to working conditions and equipment including arrangement of material, and training of workers in the best way to do the work will yield gratifying results. It is work which can readily be simplified, measured, standardized and is frequently paid for on an incentive basis. At least one person in an organization should be thoroughly conversant with mailing rates and rules.

Substantial economies are possible through the careful planning of circular mailing matter, particularly in the size and weight of the paper and envelopes involved. While this material originates in an operating department of the business, cooperation from the person supervising mailings is desirable in planning such matter.

Messenger Service. To a certain extent mechanical equipment, such as the pneumatic tube, belt conveyor, elevator, carriers on wires, replaces messenger service in large offices. Where this is not practical, the job of messenger is often regarded as a training ground for promotion to clerical work. The Harris Trust and Savings Bank has proved the value of this plan and uses uniformed girl pages for interdepartmental service.¹ A definite training and promotion plan has been developed for them, upon the completion of which they are always in demand for permanent jobs, usually in the departments in which they have been doing part-time work. **Messenger ser-**

¹ For a complete description of this plan see *System*, p. 23; 3, July, 1929.

vice can also be measured and standardized and is sometimes paid for by an incentive method.

Duplicating. Material may be reproduced in quantities through the use of carbon paper and the typewriter, and automatic typewriter, the mimeograph, multigraph, dupligraph, ditto machine, hektograph, blueprint, photostat, lithoprint, and printing from type. The character of the work and the number of copies to be made must be considered in determining the method to be used. The volume of such work should determine whether a particular sort of equipment should be installed. In large cities it is frequently less expensive to use the equipment of some firm organized for the purpose than to install special machinery which may have only intermittent use.

Stenographic. Standards and economy of production in stenographic work are brought about through attention to equipment, working conditions, policies of the firm, and selection and training of the personnel. Once the standard practice in this work has been developed it is essential to outline it in a work routine or manual, different sections of which may be designed for the use of dictators and transcribers.

Business phonographs have come into increasing use for this work, especially in large offices. The dictator's time is also saved by form letters and form paragraphs developed for use in routine correspondence. Typing from telephoned dictation is also being done effectively, especially in technical and sales departments. This work lends itself readily to measurement and is often paid for by an incentive method.

The functions of the Central Stenographic Bureau of the Metropolitan Life Insurance Company have been described as:

1. To furnish copyists and stenographic help to officers, division and department heads, section heads, and others,
 - a. Whose work is such as not to require the services of a permanently assigned employee.
 - b. Whose stenographers are absent from the office on account of vacation, sickness, or for other reasons.
 - c. Whose regularly assigned employees are not able to take care of a large but temporary increase in volume of work.
2. To select and train junior stenographers for permanent assignments either in the Central Stenographic Bureau or from the bureau to parts of the organization as vacancies occur, which assignments are usually in the nature of promotions.

Where the volume of the work warrants it, the above functions of a central bureau may be very effectively developed.

Computation. Calculations in any considerable volume are usually performed mechanically and machines for this purpose are described in Chap. III. The work is highly specialized, when performed most economically and necessitates training the operators. If there is sufficient volume of the work to establish a service unit it will also be desirable to train experts on particular machines. Remuneration for this work is often on an incentive basis.

Telephone, Telegraph, Radio. Training in the use of the telephone is important because of the impression given to the person on the other end of the wire who may form his opinion of a concern without ever having seen its personnel or offices. A telephone operator, having a good voice and properly instructed, can be a distinct asset to an office in that she can protect the executives from unnecessary interruptions by tactfully dealing with calls which need not have their attention. The use of the telephone for personal calls by clerks is discouraged in most companies, as it is apt to disturb those within earshot, and may monopolize wires which are necessary to the conduct of the business.

The telegraph, cable, and radio services are usually centralized. Information should be readily available as to the relative costs of these communications and their effectiveness as compared with the telephone and air mail. Special services not generally known are offered by companies supplying these means of communication and the literature describing them is available. If these services are used in any volume, it will be necessary to keep a record of all long distance telephone calls and other special communications in order that their cost may be allocated to the proper departments.

Reception of Callers. The importance of receiving callers adequately can hardly be overstressed. The initial and often lasting impression of a firm is gained upon entrance to its offices. In small offices it is often practical to have the telephone operator also act as a reception clerk. Larger offices frequently have for this purpose an elderly man or woman who is responsible and dignified. Long-service employees are suitable for this work, as they are apt to be generally familiar with the personnel and practices of the concern. Other duties which may be combined with the job of reception clerk are adjustment of complaints, coordination of all information service, handling of telephone and telegraph traffic, supervision of office boys and messengers, displaying samples and outstanding products of the organization, assisting at mailing desk, handling small incidental sales, and demonstrating products.

The degree to which the callers are handled successfully will depend largely upon the selection of the person to do this work. A job analysis and specifications for choosing the person to do the work will help to accomplish what the firm expects in receiving visitors. Almost invariably the character and policies of the administrators of the business are reflected in the reception clerk. The nature of the business and of its visitors will usually determine the sort of furnishings appropriate for the reception room, but the amount spent on a table, comfortable chairs, and a few magazines or other means of diversion for those waiting will be money well invested.

CHAPTER VII

FORMS: THEIR DESIGN AND USE

BY B. EUGENIA LIES, *Director of Planning, R. H. Macy & Co., Inc.*

One of the subjects which is receiving increasing attention is the question of forms and form design. Management is realizing more and more that forms, which were once considered necessary evils and universally condemned as so much red tape, can be made effective tools to simplify, speed up, and control work and thereby reduce costs. Forms, however, to be effective tools, must be properly designed from the point of view of accomplishing the purposes set, with a minimum of effort and the most economical materials. This paper will, therefore, deal primarily with the technique of form design and the analysis necessary on which to base the design.

Elements of the Problem. The material will be presented from the point of view of the analyst faced with a problem in form design. The following main divisions of the paper are therefore the elements of the problem which should be covered in the analysis:

1. What are the purposes of the form?
2. What information is needed before the form can be designed?
3. What principles of good form design should be kept in mind in designing the form?
4. What factors should be considered in determining the specifications of the form?

In conclusion there will be a brief discussion of the methods of controlling forms and of insuring the proper use and maintenance of forms.

Purpose of Forms

It is necessary to consider the two following questions before starting to design a form:

1. Are the purposes of the form justifiable?
2. Is a form necessary to carry out those purposes?

In general, all forms should be designed to fulfill either one or both of the general purposes, which are summarized by Wallace Clark in his book on "Shop and Office Forms,"¹ as follows:

1. "Forms provide the means of carrying out decisions and policies.
2. "Forms provide a basis for executive action, and for determining policies."

¹ McGraw-Hill Book Company, Inc., 1925.

If the purposes of the form can be justified, it then becomes necessary to justify a new form as the best means of carrying out these purposes. It is frequently possible to eliminate the need for the new form by using "as is" or modifying some form already in existence.

A thorough study of the entire procedure involving the form together with an analysis of the needs of the executives and departments to use the form must be made to determine adequately the purposes of the form and to justify the use of a new form. In making such an analysis we have found it helpful to use a process chart. For the discussion of this paper, we will assume that the entire procedure has been studied and the proper method determined.

Information Needed to Design a Form and Determine Specifications

It is of great importance to collect certain information about the form as a preliminary step in its design. The difficulty frequently is that the information on a form is inadequate to fulfill its purpose properly. Or as happens too often, in the anxiety to give complete information, the form is burdened with too much information. It is unnecessary for us to point out that putting too much information on a form is objectionable, not merely because of the additional paper that is required, but also because of the additional work required to fill in this information.

To simplify the collecting of this data, we have classified it into three groups, *i.e.*, data regarding:

1. Recording information on the form.
2. Using information which has been recorded on the form.
3. Handling the form.

To make sure that all the necessary information is collected we suggest the use of a tabulating sheet which will include all of the following headings. (Fig. 1.)

Recording the Information. Under the heading of Recording Information, list

1. *All of the purposes that the form is to fulfill. Beside each purpose, indicate the information which must be recorded in order to fulfill each purpose or function. If this is done, there is less danger of omitting important information or of including unnecessary information on the form.*

2. *By whom is the information to be entered on the form, i.e., the departments, the jobs, and the number of employees on each job?*

This information is very important as we shall see later when we come to discuss the principles underlying form design. The number of people on the job may be the deciding factor in the arrangement to be used on the form? It also aids in answering questions as to type of instructions to be put on the form, the quality of paper and types of binding to be specified, etc. This information is also essential as a check list to be used for consulting all those who in any way come in contact with the form.

3. *What is the source of the information to be entered on the form? Is it from other printed forms, from instructions received from some other employee or a customer, or is the information entered from the employee's own knowledge or resulting from judgment or calculations made from entries on the form?*

FUNCTION	RECORDING INFORMATION				USE OF INFORMATION				HOW SORTED	HOW FILED
	BY WHOM	BY WHOM	SOURCE	WHEN ENTERED	HOW ENTERED	BY WHOM	HOW	WHEN		
1 Address label for package	1a- Cashier's Stamp b- Salesbook & Check No. c- Dept. No. d- Salesclerk's number e- Date of Sale f- Customer's Name and Address g- Shipping Point	1a- Cashier b- Printed c- Printed d- Salesclerk e- Salesclerk f- Salesclerk g- Salesclerk	1a- Cash Rec'd or D.A. Ledger Card 1st b- Salesclerk's Memory c- Salesclerk's Memory d- Salesclerk's Memory e- Salesclerk's Memory f- Customer's Instructions g- Printed list of Salesclerk's Delivery Points	1a- When Cash Rec'd or D.A. balance b- After Sale is Made c- After Sale d- After Sale e- After Sale f- After Sale g- After Sale	1a- Stamp b- Pencil c- Pencil d- Pencil e- Pencil f- Pencil g- Pencil	1a- Entry Clerk in Delivery Dept. b- Entry Clerk Driver c- Entry Clerk Driver d- Entry Clerk Driver e- Entry Clerk Driver f- Entry Clerk Driver g- Entry Clerk Driver	1a- Authorization for Delivery b- For tracing errors c- For tracing errors d- For tracing errors e- For tracing errors f- For tracing errors g- For tracing errors	1a- As each package is sorted for Driver's Load b- When Error is Found c- When Error is Found d- When Error is Found e- When Error is Found f- When Error is Found g- When Error is Found		
2 Bill for Customer to be enclosed in package	2a- D.A. Number b- Dept. No. c- Salesclerk's Number d- Date of Sale e- Mkt. Sold Quantity Article Price f- Salesbook & Check No.	2a- Salesclerk b- Printed c- Salesclerk d- Salesclerk e- Salesclerk f- Printed	2a- Customer's Instructions b- Salesclerk's Memory c- Salesclerk's Memory d- Salesclerk's Memory e- Salesclerk's Memory f- Salesclerk's Memory	2a- After Sale b- After Sale c- After Sale d- After Sale e- After Sale f- After Sale	2a- Pencil b- Pencil c- Pencil d- Pencil e- Pencil f- Pencil	2a- D.A. Authorizer b- Customer c- Customer d- Customer e- Customer f- Customer	2a- Reference in Ledger card in file b- For making Complaint recorded on F-6 c- For making Complaint recorded on F-6 d- For making Complaint recorded on F-6 e- For making Complaint recorded on F-6 f- For making Complaint recorded on F-6	2a- Before Sale is authorized b- When Transaction is Unusual c- When Transaction is Unusual d- When Transaction is Unusual e- When Transaction is Unusual f- When Transaction is Unusual		
3 Salesclerk's Remit of Sale	3a- Money Received b- Amount of Sale c- Customer's Stamp d- Salesbook & Check No. e- Dept. No. f- Salesclerk's Number g- Date of Sale	3a- Salesclerk b- Cashier c- Cashier d- Printed e- Salesclerk f- Salesclerk g- Salesclerk	3a- Money actually received b- Total of Bill c- Cash Rec'd or D.A. Ledger Card d- Salesclerk's Memory e- Salesclerk's Memory f- Salesclerk's Memory g- Salesclerk's Memory	3a- After Sale b- After Sale c- When Cash Rec'd or D.A. balance d- After Sale e- After Sale f- After Sale g- After Sale	3a- Pencil b- Stamp c- Stamp d- Pencil e- Pencil f- Pencil g- Pencil	3a- Auditing Dept. b- Auditing Dept. c- Auditing Dept. d- Auditing Dept. e- Auditing Dept. f- Auditing Dept. g- Auditing Dept.	3a- Auditing Cash Rec'd from Customers with cash turned in by Customer b- Auditing Cash Rec'd from Customers with cash turned in by Customer c- Auditing Cash Rec'd from Customers with cash turned in by Customer d- Auditing Cash Rec'd from Customers with cash turned in by Customer e- Auditing Cash Rec'd from Customers with cash turned in by Customer f- Auditing Cash Rec'd from Customers with cash turned in by Customer g- Auditing Cash Rec'd from Customers with cash turned in by Customer	3a- Daily day after Sale b- Daily day after Sale c- Daily day after Sale d- Daily day after Sale e- Daily day after Sale f- Daily day after Sale g- Daily day after Sale		3 In Tally envelope for reference in Case (Customer's copy missing)
4 Customer's Copy for Auditing	4a- Customer's Name and Address b- D.A. Number c- Dept. No. d- Salesclerk's Number e- Date of Sale f- Mkt. Sold Quantity Article Price g- Salesbook & Check No.	4a- Salesclerk b- Printed c- Printed d- Salesclerk e- Salesclerk f- Salesclerk g- Printed	4a- Customer's Instructions b- Salesclerk's Memory c- Salesclerk's Memory d- Salesclerk's Memory e- Salesclerk's Memory f- Salesclerk's Memory g- Salesclerk's Memory	4a- After Sale b- After Sale c- After Sale d- After Sale e- After Sale f- After Sale g- After Sale	4a- Pencil b- Pencil c- Pencil d- Pencil e- Pencil f- Pencil g- Pencil	4a- Auditing Dept. b- Auditing Dept. c- Auditing Dept. d- Auditing Dept. e- Auditing Dept. f- Auditing Dept. g- Auditing Dept.	4a- Auditing Cash Rec'd from Customers with cash turned in by Customer b- Auditing Cash Rec'd from Customers with cash turned in by Customer c- Auditing Cash Rec'd from Customers with cash turned in by Customer d- Auditing Cash Rec'd from Customers with cash turned in by Customer e- Auditing Cash Rec'd from Customers with cash turned in by Customer f- Auditing Cash Rec'd from Customers with cash turned in by Customer g- Auditing Cash Rec'd from Customers with cash turned in by Customer	4a- Daily day after Sale b- Daily day after Sale c- Daily day after Sale d- Daily day after Sale e- Daily day after Sale f- Daily day after Sale g- Daily day after Sale	4a By D.A. No. Dept. No. Salesclerk's No.	4 D.A. No. of Dept. and Salesclerk's No.
5 Customer's Receipt	5a- Money Received b- Amount of Sale c- Salesbook & Check No. d- Dept. No. e- Salesclerk's No. f- Date of Sale	5a- Salesclerk b- Printed c- Printed d- Salesclerk e- Salesclerk f- Salesclerk	5a- Money actually received b- Total of Bill c- Salesclerk's Memory d- Salesclerk's Memory e- Salesclerk's Memory f- Salesclerk's Memory	5a- After Sale b- After Sale c- After Sale d- After Sale e- After Sale f- After Sale	5a- Pencil b- Pencil c- Pencil d- Pencil e- Pencil f- Pencil	5a- Customer b- Customer c- Customer d- Customer e- Customer f- Customer	5a- Customer's Receipt b- Customer's Receipt c- Customer's Receipt d- Customer's Receipt e- Customer's Receipt f- Customer's Receipt	5a- When Mkt. not received b- When Mkt. not received c- When Mkt. not received d- When Mkt. not received e- When Mkt. not received f- When Mkt. not received		
6 Packet's Remit for Tracing Complaints from Customers	6a- Customer's Name and Address b- D.A. Number c- Dept. No. d- Salesclerk's Number e- Date of Sale f- Mkt. Sold Quantity Article Price g- Salesbook & Check No.	6a- Salesclerk b- Printed c- Printed d- Salesclerk e- Salesclerk f- Salesclerk g- Printed	6a- Customer's Instructions b- Salesclerk's Memory c- Salesclerk's Memory d- Salesclerk's Memory e- Salesclerk's Memory f- Salesclerk's Memory g- Salesclerk's Memory	6a- After Sale b- After Sale c- After Sale d- After Sale e- After Sale f- After Sale g- After Sale	6a- Pencil b- Pencil c- Pencil d- Pencil e- Pencil f- Pencil g- Pencil	6a- Bureau of Adjustment b- Bureau of Adjustment c- Bureau of Adjustment d- Bureau of Adjustment e- Bureau of Adjustment f- Bureau of Adjustment g- Bureau of Adjustment	6a- Tracing Customer's Complaints b- Tracing Customer's Complaints c- Tracing Customer's Complaints d- Tracing Customer's Complaints e- Tracing Customer's Complaints f- Tracing Customer's Complaints g- Tracing Customer's Complaints	6a- When Complaint is Rec'd b- When Complaint is Rec'd c- When Complaint is Rec'd d- When Complaint is Rec'd e- When Complaint is Rec'd f- When Complaint is Rec'd g- When Complaint is Rec'd	6a By Date Dept. Customer's Name	6 By Date Dept. Customer's Name

FIG. 1.—Tabulation sheet listing information needed before determining the design and specifications of paid sent salescheck used by R. H. Macy and Co., Inc.

This information is very necessary in determining the arrangement of material on the form.

4. *When is the information entered and how frequently?* Consideration of this information is essential in order to determine the design as well as the specifications of the form.

5. *How is the information to be recorded?* Is pen, pencil, typewriter, or other type of machine used? Neither the type of paper to be used can be decided nor the best arrangement of the form determined unless the method of recording information is known.

Using Information Previously Recorded. So far, we have been considering the form from the point of view of the simplest method of filling it out. Consideration should next be given to by whom, how, and when the information entered on the form is to be used.

1. *By whom is each piece of information to be used,* the departments, the jobs, number of employees on the job?

2. *How is the information to be used?* Is it transcribed to another form or is it merely read by some one for information, or is it used for reference or as a basis for judgment. If data is to be transcribed from this form, the arrangement of the form to which it is to be transcribed and the method of making the transcription should be considered. If used for frequent reference the important information should stand out and be easily visible.

3. *When and how frequently and for how long a period is the information to be used?*

Handling the Form. Under the heading of Handling the Form, make a record of:

1. *The workplace layout* including all equipment and materials where information is recorded and used. It is impossible to design the form properly without knowing the entire set up of the surroundings under which the form is used.

2. *The method of sorting, the information by which the form is sorted,* such as name, or date, or number, or code symbol, etc., and *equipment for sorting.*

3. *The method of filing, the information by which the form is filed and the filing equipment used.* In this latter case, the information is important not only from the point of view of arrangement, but essential from the point of view of size specifications.

Principles of Good Form Design

Having collected all the information necessary in regard to the form, and tabulated it for quick and easy reference, we are ready to design the form. The general principle underlying all form design is that the recording and using of information on the form and the handling of the form will be performed with the greatest economy and with the fewest errors.

When it is impossible to design a form to satisfy all of these considerations, the question to determine is which consideration is most important and should therefore be given preference. The information previously gathered on types and number of people coming in contact with the form will help in making a decision.

The second decision to be made in designing the form is the number of parts or copies of the form needed. Consideration must be given here to:

(a) Original sales check. This form is divided into three main sections. The top section, labeled 'SENT SALES CHECK', contains fields for 'MONEY RECEIVED' and 'AMOUNT OF SALE'. Below this is a 'PERFORATION' line. The middle section, labeled 'Write D-A Number Here', contains fields for 'SALESBOOK SALES CHECK', 'DEPT NO', 'SALESCLERK NO', 'MONTH', and 'DAY'. The bottom section, labeled 'ORIGINAL', contains fields for 'APT.', 'NEAR', and 'SALESBOOK SALES CHECK'. A vertical line on the right side indicates 'Part in Package'.

(b) Triplicate sales check. This form is divided into three main sections. The top section, labeled 'Customer's Receipt', contains fields for 'MONEY RECEIVED' and 'AMOUNT OF SALE'. Below this is a 'PERFORATION' line. The middle section, labeled 'Write D-A Number Here', contains fields for 'SALESBOOK SALES CHECK', 'DEPT NO', 'SALESCLERK NO', 'MONTH', and 'DAY'. The bottom section, labeled 'TRIPPLICATE', contains fields for 'APT.', 'NEAR', and 'SALESBOOK SALES CHECK'. A vertical line on the right side indicates 'Part for the Bureau of Adjustments'.

(c) Duplicate sales check. This form is divided into three main sections. The top section, labeled 'SALESCLERK', contains fields for 'MONEY RECEIVED' and 'AMOUNT OF SALE'. Below this is a 'PERFORATION' line. The middle section, labeled 'Write D-A Number Here', contains fields for 'SALESBOOK SALES CHECK', 'DEPT NO', 'SALESCLERK NO', 'MONTH', and 'DAY'. The bottom section, labeled 'DUPLICATE', contains fields for 'APT.', 'NEAR', and 'SALESBOOK SALES CHECK'. A vertical line on the right side indicates 'Part for the Controller's Office'.

(d) Reverse of duplicate sales check. This form is divided into three main sections. The top section, labeled 'CASHIER'S STAMP', contains fields for 'MONEY RECEIVED' and 'AMOUNT OF SALE'. Below this is a 'PERFORATION' line. The middle section, labeled 'Write D-A Number Here', contains fields for 'SALESBOOK SALES CHECK', 'DEPT NO', 'SALESCLERK NO', 'MONTH', and 'DAY'. The bottom section, labeled 'INSTRUCTION TO CASHIER', contains fields for 'APT.', 'NEAR', and 'SALESBOOK SALES CHECK'. A vertical line on the right side indicates 'Part for the Controller's Office'.

FIG. 2.—(a) Original sales check. (b) Triplicate sales check. (c) Duplicate sales check. (d) Reverse of duplicate sales check.

1. The advantages or disadvantages of many copies as against the routing of a single copy.

2. The possibility of legible copies.
3. The appearance of the record.
4. The possibilities of loss.
5. The wear and tear, etc.

If a form consists of several parts or several copies, it is necessary to allocate the information to be put on each part or each copy of the form and then to identify each part and each copy either by name, by number or by color of paper or printing ink (see Fig. 2).

Accuracy, speed and usefulness depend on whether the form is arranged suitably or not. The following rules will be helpful as a guide in the proper design. Arrangement, more than any other single factor will measure the success or failure of the form.

1. Filing or sorting symbols should be conspicuous. The upper right hand corner should usually be reserved for the filing information or filing symbols or reference numbers or identification marks or code symbols, or whatever is the information by which the form is to be sorted or filed. In those cases where it is impossible to use this space, it is necessary to consider the entire handling of the form in deciding on the best part of the form to be used.

2. Provide boxes in which information can be entered. The use of boxes in which information is placed is preferable to more lines, for it results in a neater form and is not confusing even when there are a great many items to be filled in. The printed box limits the employee to recording within the box, which is not the case where lines are used.

The printed headings in the box should be set in small type, usually in a six-point Copperplate Gothic and should be placed close to the upper left hand corner.

3. Arrange the information on the form in the same sequence as it is arranged on the forms to which or from which the information is transcribed.

4. Group information by departments. Errors will be reduced and saving of time result if all information recorded or used by one department is grouped so that it will be unnecessary to search for it.

5. In designing spacing for hand written forms, consideration should be given to the type of employee using the form. Clerical workers as a general rule can write on lines spaced four to the inch, or even, at times, five to the inch. For quick entries or for employees not used to clerical work, spacing of three lines to an inch should be used.

6. If forms are to be typewritten, lines are usually unnecessary. When lines are necessary, the horizontal ones should be spaced three to an inch, which is double typewriter spacing. The reason that double spacing is preferable to single spacing is that box titles cannot be printed in the space available when the typewriter is single spaced. Vertical lines should be spaced in multiples of one-tenth inch for typewriters having pica type and one-twelfth inch for those having elite (small) type.

7. Where the form is to be made out on a duplicating or other kinds of machines, special consideration should be given to the requirements of the individual machine. Space in this paper will not permit a detailed discussion of this point. Warning is, however, given from experience that this should

not be the only consideration in designing the form. Frequently the handling and use of form is sacrificed to supposed mechanical requirements.

8. Definite economies will usually result if wherever possible the information is confined to one side of the form. If it is found necessary to print both sides of the form, an effort should be made to have complete information on each side of the form to eliminate necessity of turning. If this is possible, it would be well to consider whether it would be more economical to have two separate forms printed on one side only. However, before deciding, consideration should be given to the following:

a. How the form is used.

b. The cost of printing on two sides of heavy paper as against two separate printings on light weight paper, for if two sides are used, the form will get about twice as much use, and in the case of bond paper where transparency is a factor, it may be necessary to substitute ledger for bond.

c. Savings in filing equipment. If both sides of the form are used, less filing equipment will be necessary.

9. It is usually desirable to print instructions for the use of the form on the form itself. These instructions should be clear and concise and should help in reminding the individual when in doubt as to how the form is to be used. Where the form routing is complicated, and the people using the form do not come in frequent contact with it, it is desirable to make the instructions more detailed. The type of employee using the form should be considered. In most cases, however, the general rule mentioned first should hold, for if too many instructions are put on a form, the employee may not read them at all. Complete instructions can be recorded in instruction cards and manuals.

Instructions should, as a general rule, be placed on that part of the form where they can be read or consulted easily. Various schemes have been used by different companies in the printing of instructions. Instructions have been made part of the title, printed at the bottom of the form, or in the binding margin. Some organizations have even found it profitable to number the columns and then print separate detailed instructions, referring to the columns by number.

10. If the form is to be filed, consideration should be given to the type of file to be used, and the following points decided:

a. If a visible file, what information should be visible and whether the form should be visible at the top or at the bottom.

b. If vertical files, whether the filing symbol should be conspicuous and whether the paper is of proper weight.

c. If bound in a loose leaf binder, has sufficient binding margin been allowed? The variations in binding margins may be from one-half inch for ring binders up to two and one-half inches for some types of post binders. For the guidance of our organization, we have prepared the following chart to determine the proper type of binder to specify (Table I).

Specifications of Forms

After the form has been properly arranged, it is necessary to determine the detailed physical specifications of the form. The following is a discussion of these specifications:

TABLE I.—DETERMINING TYPE AND GRADE OF STANDARD LOOSE LEAF BINDER TO ORDER

Type	FACTORS DETERMINING TYPE TO BE USED*				FACTORS DETERMINING GRADE NUMBER TO BE USED				SPECIFICATIONS FOR GRADES			
	Capacity	Simplicity of inserting and removing sheets	Writing surface	Wear on records	Life	Temporary 1 yr. or less	Semi-perm. 1-5 yrs.	Perm. 5-10 yrs.	Grade 1	Grade 2	Grade 3	Grade 2A
Ring	Small (About 300 sheets) of 20 lb. paper on 1½" ring	Best	Very good Flat	Records subject to hard usage	Mild Normal Rough	1 1 2	1 2 3	2 3	Low grade artificial leather. Light weight chip board. No end opening lever	8 oz. Duck. Medium binder's board. End opening levers	Fabricoid No. 3000. Medium or heavy wt. (depending on size). Binder's bd. End opening levers	Grade 2A
Prong	Limited (About 400 maximum)	Best	Very good Flat	Records subject to hard usage but not as much as above	Mild Normal Rough	1 1 2	2 2 3	3		8 oz. Duck. Metal heavily nickel plated. Heavy wt. binder's bds.	Fabricoid No. 3000 Metal heavily nickel plated. Double binder's bds.	
Post	Unlimited	Good if insertion or removal is consecutive. Otherwise poor	Fair Varies with contents (The more sheets in the book, the worse the surface)	Slight wear	Mild Normal Rough	1 1 2A	1 2 3	2A 3	8 oz. Duck. Canvas hinge. Top lock. Medium wt. binder's bd.	8 oz. Duck. 2 oz. Cow-hide sides and corners. Corduroy Metal hinge & metal caps. Top lock. Medium or heavy weight binder's bd (depending on use)	2 oz. Cow-hide sides and corners. Corduroy Metal hinge & metal caps. Top lock. Medium or heavy weight binder's bd (depending on use)	Same as 2, except Endlock
Thong (Kalamasoo)	Practically unlimited (limited to size of back)	Good, irrespective where sheets are added or removed	Good	Slight wear	Mild Normal Rough	1 1 2	2 2 2	3 3 3		Standard Kalamasoo binder. 8 oz. canvas	Standard Kalamasoo binder. Leather	

* If portability is a factor a ring book with flexible covers is usually the best type—although no strict rule can be laid down.

1. Paper.

a. *To determine kind of paper.* In form work the papers most commonly used are manila, bond, ledger, index, bristol, tissue and special papers like mimeograph and ditto. To determine the kind of paper to be used, it is necessary to determine how the information on the form is recorded and used.

- (1) If recording with a pencil, manila paper is frequently sufficient.
- (2) If the form is used on only one side, bond papers can usually be used.
- (3) If two sides are used or if good erasing qualities are desired, ledger is usually necessary since ledger paper is of comparatively heavy weight.
- (4) If the form is to be filed in an upright position, Index Bristol is usually necessary. In some cases, however, where good erasing qualities are desired or where filing capacity is a factor, a thirty-two- or thirty-six-pound ledger can be used instead. This type of paper is most often used in visible filing equipments.

b. *To determine the grade of paper.* The studies made by the American Writing Paper Co. several years ago, are still the most reliable authority on this subject. For the purposes of this paper, we will merely mention some of the highlights.

In general there are two factors considered in determining the grade.

- (1) The life of the form, which is roughly classified into
 - (a) Temporary.
 - (b) Semipermanent.
 - (c) Permanent.
- (2) The character of the handling, which can again be roughly classified into
 - (a) Mild.
 - (b) Normal.
 - (c) Rough.
 - (d) Abusive.

There are other factors that determine grade of paper, such as impression or appearance. These, however, do not play an important part in Form work and will therefore not be discussed in detail.

Classifications as mentioned above are very rough. Expressions such as "mild" and "normal" are not measurable quantities. For that reason, the determination of standards for grade and weight of paper should be left to the purchasing agent and the systems manager in each organization. The importance of mentioning these factors in this paper is that too often paper is not considered at all and where printing is purchased on a competitive basis, the honest printer or the quality printer who is anxious to supply the best paper will lose out on the job.

A few general statements may be of aid. The life of the paper, as a general rule, depends on the materials of which it is made. Rags and wood pulp are the most common materials used in paper making. Papers made of sulphite are usually considered temporary, although time and time again sulphite sheets have been known to exist five and ten years. No one disputes the fact that the average paper made of rag, no matter how small the content

of rag, is better than the average sulphite sheet. Further than that we cannot go. A 35 per cent rag paper is not necessarily better than a 30 per cent rag paper. Some other measure of quality of paper is necessary, in order to determine permanence. To determine grade and weight of paper from the point of view of character of handling, the tensile, folding and bursting strength should be considered. However, manufacturers have discovered means of doping papers, so that the tensile strength and bursting strength are no longer reliable measures of paper strength and in a recent bulletin the United States Government (report of the chief of tests, 1926) recommends the folding test as the only sure test of paper quality.

As previously stated, we cannot with great precision determine on standards of quality necessary to withstand rough handling. For the present we have to leave the determination of the paper necessary to withstand a certain amount of handling in the hands of the people who are experienced in papers, guided by such information as the folding test will show. There is this further fact to be remembered, namely that a standard folding test takes place under standard atmospheric conditions. How the same paper will react under the conditions in which it is to be used is likely to be different than under standard conditions.

c. *To determine the weight of paper*, the following factors must be considered. These factors are self explanatory and to avoid taking any more time we will merely mention them.

- (1) Treatment paper is to receive. (This is a factor, since the heavier the paper, the stronger it will be.)
- (2) Number of carbon copies necessary.
- (3) Is stiffness necessary in order to aid filing?
- (4) Is the sheet so large that it requires weight to make it lie flat?
- (5) Is form to be mailed? If so, a lighter weight may be desirable to save postage.
- (6) Are both sides of the paper to be used?

d. *To determine the color of paper*. It is preferable to avoid color as much as possible in papers as an index for the copy. The use of numbers or even differently colored ink is often more desirable. Color may be used however

(1) To distinguish a copy where many similar copies are handled by any one department and where the printing is so small that a printed identification mark will not be easily visible.

(2) When two similar forms appear in one place and quick distinction between the two is necessary as an aid in the sorting operations or for some other reason.

(3) To represent something distinctive or pertaining to a particular function or department.

(4) If the form is to receive a great deal of handling, buff is most desirable for it reduces the glare and does not soil as easily as white.

2. Size of Form. Size is a very important factor in effecting savings since:

a. Papers are manufactured by mills in standard sizes and if the form does not cut evenly from the stock size, a loss due to waste of paper will result. The most common standard sizes are 17 by 22 inches, 17 by 28 inches, and 19

by 24 inches, and the doubles, sizes 22 by 34 inches, etc., for bonds and ledgers. The standard sizes for indexes are $25\frac{1}{2}$ by $30\frac{1}{2}$ inches, $20\frac{1}{2}$ by $24\frac{3}{4}$ inches and $22\frac{1}{2}$ by $28\frac{1}{2}$ inches. In designing the form, the size of the form should be multiples of the dimensions of the standard sizes. Thus the standard correspondence sheet $8\frac{1}{2}$ - by 11-inch cuts from a 17- by 22-inch and a 3- by 5-inch index card cuts from the $25\frac{1}{2}$ - by $30\frac{1}{2}$ -inch size. We therefore repeat, where forms are designed with no regard to the standard size of papers, a great loss in printing is bound to occur.

b. Savings in printing can be effected if the printer can combine two or three different jobs by putting them on the press at the same time, if the total size of the forms is equal to one of the stock sizes of the sheet. This is very common where large presses are used. There is no waste due to the "left over" if the order is in standard sizes and in quantities using an entire ream. The expense and waste of time of having special size files and binders made is also avoided by the use of standard size papers.

The following points should be kept in mind when deciding the size of the form.

a. In specifying the size of the form to the printer, allow an extra one-sixteenth inch all around for trimming.

b. Do not use a square form if it is necessary to sort the form. It is easier for the person handling the forms to determine the top or side of a form if dimensions indicate it.

c. Other things being equal, forms should be as small as possible and still accomplish their function effectively. The enthusiastic standardizer, however, should be warned that the savings effected through simply reducing the size of the form have been unduly emphasized. Frequently the cutting down may result in lessening the value of the form because not enough space is allowed for entries. As a matter of fact, paper cost, while an important element, is nevertheless only a small part of the printing cost and a small reduction in size in the average case does not make a very great difference in the final cost, certainly not a difference sufficient to justify the reduction of space, headings, etc., to a point where they are insufficient for the most effective use.

3. Ink. There is an unlimited range of color in the inks which may be used in printing. Except under special conditions the least expensive color to use, both from the point of view of cost of ink as well as cost of handling, is black. While we know of no conclusive evidence to prove that the color of ink has a tremendous effect on eye fatigue, it seems reasonable to believe, and most authorities agree that buff and green ink produce the minimum of eye strain. We have standardized on buff and green ink for rulings (replacing many colors). Under these same conditions we use buff paper whenever the handling problem justifies special consideration.

If colored inks seem desirable as a means of differentiating various forms or parts of forms, it is well to remember that if more than one color is used, the form must usually be run through the printing press twice, thereby adding to the cost. When a great many copies are ordered and if the printer has a two-color press in his plant, then two color printing may be used at practically no additional expense. It is advisable, whenever possible, to use only one color, for when the form is reprinted and another printer bids on the

job, the price may be figured as a two-color printing and thus the expense may be increased. A word about the use of red for printing numbers. We have found that the red number is less distinct and likely to produce more errors than a black number.

4. Type. In general there are three groups of type, heading type, reading type and novelty type.

a. Heading Type. For headings such as captions on forms, identification marks, etc., we use Copperplate Gothic. It is clear, neat, and easily read. When heading needs to be attractive a Goudy italic is generally effective.

b. Reading Type. Where a great deal of reading matter is grouped together as in instructions, some form of Roman type, such as Century is most desirable. The seraphs at the end of the letters, the upper and lower case, and the possibility of using italics, bold, extended, or condensed type, makes this a very flexible means of conveying the thought to the reader. It is not very ornamental and its appearance does not detract from the contents.

c. Novelty Type. Novelty type should be used only where it is desirable to attract the attention of the reader, or where appearance is the most important factor. We have not felt the need of any extensive research in this phase of form design.

5. Ruling. All rulings add to the expense of the form and should therefore be used only when absolutely necessary. When the use or appearance of the form requires the use of lines, printed rules should be used unless the design of the form justifies pen ruling.

A brief description of the method used in pen rulings will help to show how costs can be kept to a minimum. For every line appearing on the form a steel pen is placed on a board. The spaces between the pens are the exact spaces between the lines on the form. A piece of flannel soaked in the color of ink that is to appear on the form is placed above the particular pen. The ink from this flannel provides the pen with the ink it needs for ruling. A belt conveyor runs underneath these pens. The sheets of paper are placed on this belt conveyor which carries the paper under the pen and the pen rules the lines.

Cost of pen ruling is based upon the length of time it takes to do the job, which depends chiefly on the following two factors:

- a. The time required to set the pens.*
- b. The time required to rule.*

Every pen-ruled form must pass through the machine once when the vertical lines are ruled, and again when and if horizontal lines are ruled. Horizontal lines are usually ruled by pens set in gangs. The unit of measure or the distance between pens is one point or $\frac{1}{12}$ inch. Horizontal lines should be spaced 12, 13, 14, etc., points to the inch. Twelve points is $\frac{1}{6}$ inch, and it is felt that seldom if ever should the distance between horizontal lines be less than this. Eighteen-point, that is $\frac{1}{4}$ -inch, spacing is quite common.

Vertical lines are nearly always ruled by individual pens so that the distance between vertical lines may be anything at all. Fluid ruled forms should be so designed, however, that as many vertical lines as possible start and stop

at the same point on the sheet. It may happen that the starting of several vertical lines at different points on the sheet will necessitate that the form be passed through the ruling machine twice or more for the ruling of the vertical lines, thus increasing the cost.

The expense of securing proofs of rulings is tremendous and therefore usually prohibitive. It is, therefore, necessary to have specifications for rulings perfect since no corrections are possible. It is even more necessary to have accurate specifications for a ruled form than for a form for which a plate is to be made, for the loss in case a plate is wrong, is merely the cost of the plate, while if the rulings are not specified correctly, the cost is the labor of setting up the machine, the time the machine has been operated, and the entire value of the paper for the job.

For color of rulings, see above, under color of ink.

The test of quality in ruling is:

- a. Accurate spacing.
- b. No overrunning of lines beyond the intersection.
- c. No short-stopping of lines before the intersection.
- d. Clear, sharp, evenly and uniformly colored lines.

6. Carbon. If carbon is to be used with the form designed, and if the form is to be padded or bound in book, specify the carbon desired so that the printer will supply the carbon in the exact size, fitted into the pad or book.

There are three types of carbon: pencil, pen, and typewriter.

a. Pencil carbon.

Pencil carbon can be easily recognized by the soft, dull, thick, and uneven surface of the carbon side. Such a carbon is necessary for pencil in order that the dull point of the pencil may leave an impression on the copies. There is also a light weight pencil carbon obtainable which resembles typewriter carbon. This light weight is to be used only when many pencil copies are necessary. Sharper copies usually result from this carbon, but it requires more pressure than the other carbon by using a hard pencil and a stiff support.

b. Pen carbon.

A pen carbon is similar to a typewriter carbon but has a very high sensitive film covering it and is therefore suitable for use with steel pens.

c. Typewriter carbon.

These carbons are the least expensive but are satisfactory for use only with typewriter. They are thin, fairly durable, and produce many copies.

The factors in quality of carbon are paper, color and coating. The paper determines the durability of the carbon. The coating determines the quality of the carbon. A poor carbon will give blurred impressions, smear a great deal and result in soiling the hands of the operator handling it.

7. Binding. Forms will be delivered by the printer in any manner specified:

a. The cheapest way is loose. The printer packs the forms in bundles of 50, 100, or 500 or in any other quantity specified. Cards, tags, loose-leaf sheets are usually delivered loose.

b. Pads. The advantages of pads are: ease of handling supplies; an aid in eliminating waste (reduces spoilage by holding the forms together and makes possible the use of carbon).

c. Bound books. This is the most expensive way of delivering forms. It should be used only where absolute registration of carbon copies is necessary or where one copy is necessary for permanent keeping and circumstances make it desirable that this copy be kept safe from the moment it is issued.

There are many types of bound books for forms. The most common styles of bindings used by the average concern are:

- (1) Wire stitched Kraft top chip board box.
- (2) Light weight press board or imitation press board covered book.
- (3) Medium weight press board or imitation press board covered book.
- (4) Printed jute board covered book.
- (5) Heavy weight printed jute board covered book.
- (6) Marble board covered book.
- (7) V-tongue book.

In order to determine the proper type of binding to specify, we have prepared a chart (Table II), shown below, which shows the facts that must be considered to determine the binding. This chart has been designed for the needs of our own organization, and is shown here merely as a type of analysis necessary in order to standardize bindings and not as a general guide to be followed by all organizations.

Where the work place is limited in size and the manifold book is large, manifold book manufacturers produce a book known as flapback, which is an ordinary book with a special hinged cover so that the front cover may be turned completely back and underneath the book cover.

8. Numbering. Forms can be numbered with little additional expense, if a space of 2 in. x $1\frac{1}{2}$ in. is allowed for the numbering machine and if the number to be desired is to be printed in the same color ink as that of the form. The size of numbers depends upon the standard numbering machines supplied by manufacturers.

9. Punching. If forms are to be placed in a binder, they must be punched for the binder to be used. The common methods of punching are:

- a.* Round holes generally used for ring binders.
- b.* Slot holes for use with post binders.
- c.* Special punching such as required by the Kalamasoo Binder, the Brooks Visible or other special binders.

If a form is to be bound, it should be designed to fit one of the several standard size binders. There is such a range of standard binders that this should not be difficult. The holes, of course, should be spaced so as to fit the binder in which they are to be placed. Sheets for ring binders are usually punched with either $\frac{7}{32}$ -inch or $\frac{5}{16}$ -inch holes, depending to a large extent on personal preference except that the larger holes are nearly always used if the binder has rings $1\frac{1}{2}$ inches or more in diameter. Holes in forms to be filed in a post binder should be $\frac{1}{32}$ inch larger than the post, *e.g.*, for a binder with $\frac{3}{8}$ -inch posts, the hole should be $1\frac{1}{32}$ inch in diameter; for

a binder with $\frac{5}{16}$ inch posts, the hole should be $1\frac{1}{32}$ inch in diameter; for a binder with $\frac{3}{16}$ -inch posts, holes should be $\frac{7}{32}$ inch in diameter. The post sizes above mentioned are those in general use.

Table II.—TYPE OF BINDING TO SPECIFY

Handling book receives			Reference to copy remaining in book	Size limitations	Style number specified	Remarks
Normal	Rough	Abusive				
<i>x</i>	..	..	None	None	1	Form is numbered and a stronger protection than padding is necessary
<i>x</i>	..	..	Infrequent	$8\frac{1}{2}$ by 11	2	Cover not strong enough for upright filing
..	<i>x</i>	..	Frequent	None	3	Suitable where flexible covers or use on the outside is desired; cover will resist weather
..	<i>x</i>	..	Frequent	$8\frac{1}{2}$ by 11	4	Good filing record if not over $8\frac{1}{2}$ by 11
..	..	<i>x</i>	Frequent	None	5	Good filing record
..	..	<i>x</i>	Constant	None	6	Good filing and good appearance
..	..	<i>x</i>	None	None	7	If used in great quantities, the savings in binding costs will warrant the purchase of covers

Loose leaf binder manufacturers have prepared tables of standard gauges which should be consulted before the form is settled.

10. Perforations. Perforations are of three major types.

- a. **Press perforations**, perforated by the printing press while printing. It can be recognized by the coloring of the perforation. This perforation when made on a job press is not very reliable for it is just as likely to come through perforated too deeply as perforated too lightly. It is inexpensive and is to be used on inexpensive forms, where the neatness of the job is not an important factor.
- b. **Plain perforation**, made by the printer on a perforating machine, in a neat, uniform perforation, especially desirable on tags.

- c Pin perforation, made on a perforating machine, is the strongest of all forms of perforation. It is as expensive as the plain perforation mentioned above.

If there is danger of the parts becoming detached before use, specifications to the printer can be made to perforate only a small portion of the form and leave one-fourth an inch or one-half an inch at each edge unperforated. Salesbook perforations—The perforations made on the salesbook or rotary printing presses are similar to the plain perforations mentioned above. If there are no numbers on the form, the perforations can be arranged in any manner. However, economical use of rotary presses requires that perforations be parallel to the numbers appearing on the form.

Methods of Controlling Forms

It can readily be seen from this discussion on the design of forms that the analysis to be made before the form can be designed as well as the proper designing of the form is a technical job and requires training and knowledge. In order to get the proper results, this work cannot be left in the hands of inexperienced people or assigned to individuals who do not feel the responsibility involved. As has often been said, a form is a management tool, and like all tools, if improperly designed, does damage by causing work to be ineffective as well as by wasting the form itself.

It is therefore advisable to designate an individual, or, if the organization is large enough, a division of trained analysts who will specialize in the study of system, its proper analysis and the design of forms. To avoid the printing of forms on the spur of the moment, and to insure that forms requested are necessary and properly designed, the systems division should approve all forms before they are purchased. This division should also approve all changes and discontinuance of forms as well as new forms. It will be found that a division of this type is not only best qualified to do the most effective job in form design, but can also bring about greater cooperation between departments and greater uniformity in the systems in all branches of the organization. Each form should be registered with a number or symbol to aid in classifying and stock keeping.

The job of the systems division should not end with introducing the forms. Changes desired on established forms already in use should be referred back to the systems division to be analyzed by the same procedure as was used before installing it, for a changed system is in reality a new system to replace an old one, and requires as careful a study as a new system does.

Even slight changes should be referred to the systems division to avoid the danger of not securing the approvals of all the executives who originally approved the form. Too often, forms are changed at the request of one executive who in his haste may overlook the fact that many other departments in the organization are using the same form. This reference to the systems division will also avoid hasty changes that consider savings but not the cost. By cost we mean, not only equipment but the cost of repairing errors, etc.

It should be made clear to all the members of an organization that a system introduced cannot and must not be changed unless all executives who originally approved the system, approved the change. A great danger that is always existent lies in unauthorized changes made by individuals using the system, without securing the proper approvals. These changes are usually the result of temporary emergency measures, and are continued after the emergency ceases. We have, therefore, found it advisable to issue together with every system, a standing order which relates to the system as a whole, and an instruction card for each job coming in contact with the system. These standing orders and instruction cards must be followed as written, until a change has been properly authorized. Unless these steps are taken, all the effort put into designing the best form for a job goes to waste.

CHAPTER VIII

OFFICE PLANNING AND CONTROL

OFFICE LAYOUT

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The Purpose of Proper Office Layout. An adequately planned office will reduce the cost of doing business. The economies will arise out of the following considerations which are the aim of proper office planning:

1. To provide sufficient and not excessive space for each individual and for the working unit based upon careful examination and analysis of all of its requirements.
2. To provide working conditions conducive to the highest state of working efficiency and comfort, in keeping with the tasks to be performed, and representative of the character and standing of the business organization.
3. To facilitate supervision, control, and the flow of work through the office by means of proper layout, intercommunication facilities, and mechanical contrivances.
4. To provide for expansion, if and when necessary, with the minimum amount of disturbance and expense.

The size of the office affects these considerations only in that the amount of saving possible will increase with the size of the unit under consideration. Therefore, any technique described can be simplified or extended to meet the requirements of varying conditions in office size. The opportunity for economy in very small office units is often surprising.

Who Should Do the Job? The office manager is obviously the proper person in the organization to carry the responsibility for analyzing this problem and working out its solution. In smaller organizations there is usually someone whose duties correspond to those of office manager. It may also be desirable to call upon professional management engineers for help and cooperation. In any case, the problem warrants the very best of scientific analysis and a handling of it that will secure and hold executive support and organization cooperation and achieve the maximum beneficial results.

When Should It Be Undertaken? Correcting faulty office layouts is usually not thought of or is deferred until the organization decides to move to new quarters. Examination may show that the savings arising out of improved layout will pay for the cost of the change in a short time and remain as a credit thereafter. The examination may show that a move to other quarters is desirable or that a move to larger quarters may be deferred

At So Many Dollars per Square Foot per Year. A contract for office space rental is usually entered into for a period of years. In the congested business areas of large cities these rental charges per square foot per year are high, and each unnecessary foot taken will therefore write itself into the cost of business operation for a corresponding period of years. These improper space standards are also likely to affect estimates of space needed for expansion and in this secondary manner they again inflate rental costs. It must also be remembered that inadequate space standards result in decreased working efficiency which, while not always directly measurable, is present just the same. A careful analysis is necessary to determine the correct amount of space to be assigned for the various office tasks and their equipment.

Other Losses Not Always Evident or Measurable. The productivity of the individual worker (and this is more true of the office than of the industrial worker) is dependent in part upon the physical conditions under which he or she works. A properly planned office will therefore take into account natural and artificial lighting and ventilation, temperature control, noise reduction, drinking water, lockers, toilet facilities, paint or decorative treatment, floor covering, and proper equipment and tools with which to work.

The proper and natural flow of the work through the office unit must also be considered. Back tracking of papers and excessive personal intercommunication reflect themselves in cost both directly and indirectly through retardation of the normal pace of office work movement. The office layout analysis will often point the way to improved work methods, allow for proper supervision, scheduling and control, and disclose shortcuts through elimination of work steps. It often brings to light excessive or outmoded equipment which is "eating its head off" in floor space consumption or reduction in individual or collective working efficiency.

It is assumed for purposes of this discussion that the building itself has been properly planned. It is also assumed that the planning of the organization as a whole has adequately taken into account the relationship of the various departments, both to each other and the organization as a whole. Most of the considerations which apply to the planning of an individual office unit will apply to the planning of the organization as a whole. Acting upon this assumption we shall consider the planning of a single unit only.

An Outline of the Technique of Office Layout. It is first necessary to record conditions as they exist. To this end an architectural floor plan should be secured. This should be to scale of one-eighth or one-fourth of an inch to the foot, depending upon the overall size involved. A print with white background is preferable. All partitions, doorways and equipment must now be carefully and neatly drawn in to scale. The designation of the various subdivisions should be shown. Desks, chairs, and files are readily recognized from outlines shown on the plan, other equipment not readily identifiable should be marked with its name, and sizes of all equipment should be plainly shown. It is considered standard practice to have all designations read either from the bottom or right-hand side of the drawing. The names of individuals or the names of their positions should be neatly marked upon the equipment outlines. Telephones, electric outlets, mechanical devices

requiring electric current should be shown on the master plan or on a copy of it. Copies of the master plan should be made by photographic or other process. One copy should be marked with the exact locations of existing ceiling light outlets with wattages indicated and locations of control wall switches shown. This copy can also be used to show all other electric current facilities available and also for such plumbing details as basins or drinking water fountains. If it is feasible to show all details upon the master plan, such a course is more desirable due to the interrelationship of all of these factors. Copies must be made however for the purpose of indicating work flow.

Work flow should be carefully studied and indicated upon a copy, or perhaps divided into sections and indicated on separate plans. Where the flow is complicated, it is desirable to make copies on transparent paper so that they may be superimposed. These data will form the basis of an analysis which should then be made as to how such work flow could be simplified or improved by changes in the layout.

If the planning involves the transfer of the unit to new area, an architectural plan of the new area should be secured. This should be to the same scale as the plan of the space to be vacated. If no move to other location is involved, another copy of the outline plan of the existing space should be secured. This copy should show only the fixed walls, columns, and partitions or other equipment which cannot or will not be moved or changed.

In either case, templates to scale should now be cut for all existing movable equipment. The templates should be cut from light cardboard or index bristol, preferably of a color which contrasts well with the background of the plan and photographs well, and in such a manner as to make any lettering on templates readable after photographing. Yellow or salmon is very satisfactory for this purpose. The templates must of course be cut to the same scale as the plan. They should be marked with the designation of the equipment, its size and the owner's name or identifying number. By mounting the plan upon a light board and using map pins these templates may be pinned over the master plan as a check to see that all have been accounted for. Having provided templates for all movable equipment, these may be laid on the plan of the new space or an outline plan of the existing space and various arrangements tried out. Based upon data developed in the previously described studies of work flow, the templet arrangements can be shifted about until the best groupings, both as to utilization of space and work flow, have been arrived at. The templates can now be pinned in place on the new plan. Photographic copies of this new plan can then be used for indicating electric outlets, telephone connections, drinking water, etc., and in connection with moving schedules.

Space Standards. A study of the above described plans and layouts, and an examination of the use to which space is being put will gradually allow for the setting of space assignment standards. While these standards, like all other good standards, must remain flexible they will point out that for a certain well defined job with its customary equipment a definite minimum adequate allowance of floor space is necessary. Standards of this kind simplify the planning and control problem in that they help to eliminate

wastes and furnish the basis of estimates of floor space required. A study made in 1930 by the National Office Ratios Committee on space standards and published in *System Magazine* for April, 1930, showed a wide variation of these standards. A study of this article will give a good idea of the factors involved and the possible savings which may result. The scope of this discussion does not permit a detailed examination or study of methods involved in arriving at or accepting such standards.

Inventory of Equipment. Many companies maintain an inventory of all equipment and have all such equipment tagged. Where this is not so, it is desirable to inventory and tag all equipment prior to moving it, so that the equipment may be accounted for after the move has been made and in scheduling it in and out and getting it set in its proper place. In connection with the inventory necessary at the time of the shift it is desirable to examine all equipment to determine which, if any, is inadequate, decrepit, or otherwise undesirable. Substitution or changes can then be planned for at the time the move is made.

Some Comments on Moving. It is obviously impossible to set down here all of the details which must be looked after in connection with a rearrangement or move of an office unit. Some general observations, however, may prove helpful. Careful planning is the first essential. A sequence schedule must be worked out to avoid confusion and simplify both the moving in and the moving out of equipment. Schedules for electrical work, plumbing, structural changes, etc., must be coordinated with the moving schedules. The movement of elevators, vans, etc., must be studied and fitted into the plan. Equipment which does not readily go through doors or into elevators must be spotted in advance and provision made for handling it. Weights of equipment must be considered both from a handling standpoint and also as to elevator capacity. The necessary personnel for dispatching and placing equipment must be organized and instructed. Such matters as these will determine whether or not the move is done quickly and without confusion or otherwise. It is safe to say, however, that all the time and effort spent on planning a move will pay generous dividends. And this, in fact, may be said to apply to the entire subject under discussion.

PLANNING AND SCHEDULING OFFICE WORK

BY EVELYN M. DAVIS, *Partner, Woodward, Fondiller and Ryan*

There are very few who have the opportunity of planning and scheduling office work for a new organization. The problem with which this section shall deal is therefore how to plan and schedule work for an organization that has been running for some time. It has been demonstrated that an organization which installs efficient central planning and controlling of its routine can save at least 20 per cent of its routine pay roll.

This subject will be treated under the following headings:

- A. The need for planning and scheduling office work.
- B. The creation of a planning and scheduling department.
- C. Special planning problems.

A. The Need for Planning and Scheduling Office Work.

The principal causes of department inefficiency are:

1. Plans do not keep pace with the growth and development of the organization.
 2. Changes are made in certain details of the routine without realizing how they affect the whole.
 3. Personality of the department head is allowed to control the growth of the department.
 4. Lack of definite knowledge by department head of each clerk's duties.
 5. Failure to select the right type of clerk for the job.
 6. Lack of standards of production.
 7. Lack of balance between units in the routine.
 8. Lack of control of routine of the department.
- A discussion of each of these points follows:

1. Basic Plans. When a company gets its routine plans under way, following a thorough reorganization of its plans, the executives usually heave a deep sigh of relief that the trouble is over. The executives, after having taken an active interest in the planning, leave their plans to be followed through by less able personnel. In a relatively few years the plan is outgrown and the executives are out of touch with the situation. Clerks and supervisors change the routine in which they are engaged, sometimes because they have misunderstood instructions, sometimes because they believe they can improve it.

In the premium crediting division of a casualty insurance company, premium cards are maintained for every policy in force and the payments are posted thereto as they are received. In addition, commission cards were maintained for each agent. The commission cards had been intended to control the premium crediting and the premiums were to be posted therefore independently to both records. It was found, however, that the clerks were crediting the premium cards currently and then at the end of the month copying in totals to the commission cards. Under their revised method, no control of the figures was obtained. The manager could not believe that such a thing had been occurring for three years without his having been aware of it.

Moreover, as an organization grows and volume increases, the management should review records to decide whether they are still of value. When a business is small the management watches details closely; as it becomes larger, the cost of collecting such data frequently outweighs its value. Furthermore, the specific information is often no longer of interest. Yet we find departments still maintaining records which have outgrown their usefulness. Often long hand methods are continued when the volume is such that machine methods would be more economical. After machines are introduced, plans should keep pace with the improvements that are made in these machines each year.

2. Changes in the Routine. No change in any part of a routine should be made unless it is authorized by someone acquainted with the entire procedure. The violation of this principle causes considerable waste in an organization.

The manager of a claim department wished to count the number of claims payments by territory so that each of his adjusters would be responsible for approximately the same amount of work. He could have obtained a rough gauge of what each adjuster was doing by keeping a record within his own department of the number of new notices in each territory. However, he decided it was easier to request the information monthly from the statistical department. The head of the statistical department happened to be an ambitious type who would have furnished any amount of information to anyone, so he readily assented. The extra work involved required an additional clerk in the statistical department.

A different type of waste was found in the accounting department of one company. The company had an elaborate Elliott-Fisher installation which analyzed its premium receipts by state, agents, etc. Several years later Hollerith machines were installed, and thereafter the statistical department furnished the monthly distributions. In spite of this fact, however, the Elliott-Fisher operators continued their columnar distributions when all that was needed was a total posting to serve as a control to the distributions of the Hollerith machines. The Elliott-Fisher division should have been reduced by 60 per cent.

3. Personality of the Department Head. Too often the personality of the department head is allowed to determine the value of the department and to control its growth. His influence on the department is felt in a number of ways.

First, there is the good-natured department head who gives in to all the other heads and who is willing to furnish them with any data or information, regardless of how much work is involved. Often the information is of temporary interest to the man who requests it, but long afterwards the other department continues to furnish it.

Secondly, there is the ambitious type who volunteers to undertake or suggests new activities and gets control of these activities through the forcefulness of his personality in selling the ideas, but is not careful to line up the cost of the activity with the benefits accruing to the company therefrom. This type causes a great deal of trouble in an organization, because he is not content with merely increasing his own department, but attempts to infringe on the activities of other departments. It is not intended to disparage the employment of enthusiastic, ambitious executives; it is merely pointed out that their activities require just as careful control as the slower working type.

A very capable woman who is in charge of the statistical department of a fire insurance company was unusually machine minded and began to devise ways and means of doing more and more of the accounting on the Hollerith machines. The head of the accounting department rebelled as he saw his hooks of accounts disappearing from his department, but as he was not as convincing a talker as the statistician, he lost his arguments at every conference. The result is that the bookkeeping is being done in a very ingenious manner in the statistical department, the accounting department has dwindled to almost nothing, while the company has gained nothing from the change. The system is working successfully, but it depends too much on a certain personality to be a safe procedure. It is a creation of the present

statistician; she is exerting all her ability to make it a success. If she were to leave there is grave doubt if the system would work satisfactorily. In any event, personalities should not have determined the procedure.

Frequently we have the opposite type of man, who never wishes to change any part of the routine of his department or to take on any new duties and who can always find reasons for his refusal.

Too often we find special jobs assigned to the department head in whom the manager has the greatest amount of confidence and who he feels will complete the task with the least help from himself, in spite of the fact that the routine is such that another department could handle it more economically.

It is therefore necessary for an unprejudiced person to plan the activities of each department and to assign specific jobs where they can be handled most expeditiously and most economically.

4. Knowledge of Each Clerk's Duties. A department head after a few years frequently forgets the details of his department and does not know what each clerk is doing. As the volume of work increases, therefore, he must rely on the individual's ability or willingness to handle more work within a day. Furthermore, if his department is given additional tasks, he will assign them to whichever clerk will undertake it with the least assistance or explanation from him. That is why we so often find clerks with an unequal amount of work assigned to them.

When the department head is not sure of the details, it means that the instruction of new clerks is left to some one less responsible. Wrong explanations are thus often given to the new clerk, and the routine soon grows away from the original plans. Some centralized planning authority should be given the duty of checking and correcting such trends.

5. Failure to Select the Right Type of Clerk. Frequently the wrong type of clerk is selected for a position and the department head is too lazy to replace her.

The misfits may be classified under the following headings:

- a. Lack of education necessary for a specific job.
- b. Wrong personality to work with the particular department head.
- c. Ability as an individual worker but no administrative ability.
- d. A mental worker in a job requiring mainly manual dexterity or *vice versa*.
- e. Unable to cooperate with the other clerks in the unit.
- f. Uncongenial work.

6. Lack of Standards of Production. Every department head should know exactly the volume of work handled by each of his clerks and should determine what is the standard of production to be expected for each type of work. It is surprising how seldom production records are kept and how seldom clerks are required to maintain a prescribed standard.

Unless standards of production have been set, it is difficult for the manager to obtain work from his clerks at their greatest capacity. On the whole, clerks will do what is expected of them. If the manager expects only 30 checks to be typed a day, the clerks will unconsciously slow down to that rate; if he requires 60 checks to be typed the clerks will type 60 checks. Of four policy typists each receiving approximately the same salary, one girl

typed 90 policies a day; the others averaged 40 to 50 policies. After an examination of the work it was decided that an average typist should complete 75 policies a day. One of the typists was transferred to other work, the salary of the girl who was typing 90 policies was raised and the other two typists were expected to type 75 policies a day. The result was surprising. They are all typing 90 to 100 policies daily. Of course, the simplest way would have been to pay them on a bonus basis, but in this particular instance the management did not care to do so.

An analysis of the number of claim checks typed daily showed that the average was 30 checks per typist. The average should have been about 75 checks. After watching the work it was obvious that one of the typists was doing practically nothing; it was recommended that she be eliminated, but the manager insisted he could not do without her. The typists were therefore required to initial the carbons of the checks, and a record of the individual performance was kept. The typist in question showed a record of 6 checks one day and 10 to 15 each of the remaining days. The record therefore settled the argument. Centralized planning and centralized control are the best means of assuring the correction of such situations.

7. Lack of Balance between Units. It is necessary for the routine to be so organized that each step proceed at the rate of speed desired for the most effective functioning of the department, or as between departments, that the rate of speed be that giving the most effective results for the business.

Inspection of the policy routine in an accident and health company discovered that the work halted at the assembly desk. At this point the riders, photostats, etc., were pasted in the policy, and all were numbered. The two clerks engaged in this process were below the average. The result was that the work was halted at this desk, with results detrimental to the proper functioning of both department and business.

8. Lack of Control. The fundamental principle of controlling production in a clerical department is just the same as for the control of other products, viz., that who-ever is responsible for the work should know:

- a. The volume of work received every day.
- b. The rate at which the work is completed.

This record is the most important record that can be furnished to an executive and without it a department lacks the incentive to push ahead.

The results of such control sheets installed in the policy department of an insurance company are worth relating. The function of the policy department is to issue new policies. The management had received complaints from time to time from the agents in the field that too long a time elapsed before they received the policies; this delay often resulted in their losing the business. No one had any exact information, however, as to the time elapsing between the date the application was received and the date the policy was mailed, and there were no records on hand to furnish this information. An application register was installed and every application was numbered as it was received. The department head then made a weekly summary to show the percentage of the policies issued by the end of the first day, by the end of the second day, etc.

The reports showed that the situation was more serious than had been realized. Only 1.8 per cent were issued the same day as received; 2.8 per cent were issued by the end of the second day; 3.6 per cent were issued by the end of the third day; 7 per cent by the end of the fourth day, and 13.4 per cent by the end of the fifth day. Experience had shown that at least 30 per cent should be issued the same day and 70 per cent by the end of the second day. About 20 per cent of the applications received are held for several days awaiting further information.

The problem was, therefore, to increase the efficiency of the department so as to enable it to issue policies as promptly as its competitors. Its weakness was one of administration and the situation was corrected by installing control sheets at the critical points in the routine. Without the control sheets it would have been difficult to detect the points at which the delay was occurring. It was found that the speed of the routine was dependent at two points upon other departments, and control sheets were immediately established to register the elapsed time in the passage of the work between these departments. The clerks in the department take a keen interest in the records shown by the control sheets. Since they fix the responsibility for any delay, each one is anxious to complete her part as quickly as possible. Without the control sheets, the efficiency of the department is not known, but is dependent upon impressions and prejudices.

The following table shows the progress in efficiency. The change was effected in a week early in March, 1930. In addition to the progressive improvement in speed, it was possible to reduce the number of clerks from twenty-nine to twenty-three.

PROGRESS REPORT

Percentage of Applications on Which Policies Were Mailed by the End of Each of the First Five Days

Period	Number of applications received	Policies mailed				
		Same day	2d day	3d day	4th day	5th day
November, 1929.....	2,690	1.8	2.8	3.6	7.0	13.4
January, 1930.....	2,484	1.6	4.5	13.2	37.4	61.7
February, 1930.....	3,574	1.2	9.7	41.3	70.5	81.5
March, 1930.....	3,701	9.6	48.9	76.0	81.3	82.4
April, 1930.....	3,212	21.5	65.7	76.9	78.6	79.9
May, 1930.....	4,146	22.1	55.5	75.2	80.3	81.6
June, 1930.....	3,671	19.6	64.3	77.6	83.4	84.8
July, 1930.....	2,863	31.3	73.2	80.6	81.9	82.6
August, 1930.....	3,263	30.1	71.9	79.4	80.9	81.3
September, 1930.....	3,162	32.1	71.7	76.2	76.9	77.3

B. Creation of a Planning and Scheduling Department.

In the following outline of the formation of a planning department, recommendations are made as to organization, selection of personnel and training required for effective work.

Organization. The work of a planning department divides itself into three phases:

1. Planning.
 - a. Methods.
 - b. Routine.
2. Personnel.
 - a. Selection.
 - b. Training.
 - c. Development.
3. Control.

Where the company is large enough these should be organized as separate units, the control being installed and subject to review by the manager of the department. In general, the planning and personnel will have to be handled by different people. The qualities needed in an efficient organizer are entirely different from those required for selecting, training and developing the personnel, and are not frequently present in a single personality. In fact, the development of proper plans and suitable personnel is not always recognized as two distinct problems requiring different personalities to control their development, yet needing unified action under the direction of the manager, if the best results are to be attained.

The controller of a large life insurance company who has been responsible for cutting down company expense provides a good illustration. With a good engineering background, keen analytical ability, and a shrewd ability to plan, he makes the most of the latest office appliances and is adept in installing short cuts. But he never sees a problem in terms of the people with whom he has to work. When he tries to put his plans into operation, therefore, he is frequently met with opposition which he is helpless to handle because he does not understand it. No matter how clever the plans are, if the right type of people are not selected to carry them out, or if the planner does not know how to win their cooperation, only a part of the desired result is obtained.

As indicated above, if the organization is large enough the manager will be responsible for the controls. Otherwise, this function should be undertaken by the supervisor of the planning section. The object of the controls is to determine that the plans are being carried out economically and on time, and to detect any weaknesses in administration before they become costly.

1. Planning Unit and Control Unit.

a. Qualifications for Supervisor. The supervisor should be familiar with the requirements of the business in all departments, and the relative importance of each requirement. For example, he should recognize types of work where economy of operation is subordinate to speed of operation, or when accuracy is more important than speed. He should understand the interdependence of departments, and what is more important, appreciate the home office needs of the field or sales force.

The supervisor should be capable of commanding the respect of the department heads for his knowledge so that in time they will come to him voluntarily for aid. He should know how to approach the clerks so as to get the necessary information and suggestions from them. He should have patience to be willing to let things work out gradually so that changes can be made with the least disturbance. He should have the analytical ability to break down the most complicated procedure into simple steps which form its elements. He should have creative ability and imagination, so that he can see the possibilities in new machines and new suggestions and apply them to his own problems. He should have the will power to push ahead when he finds reluctance to change; the courage to persist in the face of unpopularity; the ability to keep out of all office politics. He should be able to command the confidence of the officers to effect the changes he recommends.

b. Training and Organizing for the Position of Supervisor. In starting with a company in this capacity, it is usually necessary for the supervisor to undertake the following steps:

1. **Writing an Office Manual.** The supervisor should write the procedure being followed in each department. It is important that this be done in the natural order of the flow of work, as he goes from one department to another. The specific duties of each desk should then be determined.

2. **Suggested Changes in Methods or Routine.** After the supervisor has studied the existing procedure, he can recommend changes in the methods or procedure. The approval of the department head must be obtained to all the recommendations.

3. **Writing the Revised Office Manual.** A revised office manual should then be written to incorporate the changes that have been approved.

4. **Standards of Production.** Standards of production for the various operations should be set up.

5. **Duties of Each Desk.** The routine for each desk should then be established, based upon the volume already determined as the average production to be expected.

6. **Approval of Forms.** The forms should be studied, simplified and fitted to the revised procedure.

7. **Selection of Personnel.** At this point the supervisor of the personnel section should be consulted for recommendations as to any changes in personnel.

8. **Installation of Controls.** Control sheets should be devised which will fix the responsibility at the critical points, will show the management the rate of production, and will bring to light weaknesses of operation as soon as they occur. These control summaries should be furnished weekly to the manager.

9. **Employee Production Records.** Individual performance records should be maintained as a basis for salary increases.

c. Responsibilities. He is responsible for becoming acquainted with the latest office appliances.

He is responsible for keeping in touch with the latest management principles, through organizations, reading and visiting other companies.

No change in any details of the existing procedure should be made without his approval.

No new work should be undertaken without his analysis of the necessity, the value to be obtained and the cost of the additional work.

No additional clerks should be hired unless authorized by him.

2. Personnel Unit.

a. Qualifications for Supervisor. The applicant for this position should be one who is familiar with the requirements of the business, so as to understand in general terms the duties of each desk and the relative importance of the various jobs.

He should have a good background in psychology; like people; have in particular the ability to talk to the clerks on their own level and yet at the same time the ability to command their respect; be able to be sympathetic without becoming too friendly; be able to judge people by their merits and not be influenced by hearsay or by the opinions of others. He should have the courage to give his opinion about the clerks regardless of the likings of the department heads or officers. He should know how to criticize without offending, how to praise without flattering.

b. Training and Organizing for the Position of Supervisor.

1. Getting Acquainted with the Personnel. Each department should be visited and the clerks interviewed, so that the supervisor becomes acquainted with each clerk. Eventually he should know them well enough to be aware of their outstanding abilities and main weaknesses.

2. Learning the Duties of Each Desk. The supervisor should learn the duties of each desk in a general way so that when a vacancy occurs he can select the candidate who can handle the work efficiently.

3. Getting Acquainted with the Department Heads. The supervisor should know the department heads so as to be able to select clerks who will work harmoniously with them.

4. Learning the General Rules. The supervisor should acquaint himself with the general rules of the office as to lateness, vacations, salary increases, pension plans, etc.

5. Personnel Records. The supervisor should install personnel records to fit the requirements of the particular office.

c. Responsibilities. He will be responsible for the selection of personnel to fill any vacancy, subject to the approval of the department head; recommend candidates for transfer when they are misplaced or have reached the maximum salary; recommend candidates for new positions that are created; settle personnel difficulties arising between clerks and department heads; be consulted on salary increases; help the clerks to solve any personal problems which they may have; make recommendations to the management for any required personnel policies.

C. Special Planning Problems.

Coordination between Departments Where a Central Planning Department Does Not Exist. There are many organizations in which a central planning department does not exist. In order to obtain co-operation between departments, the manager should hold monthly meetings of his department heads to discuss their respective problems and to help each one to gain a knowledge of the other's needs. The success of these meetings depends entirely on the personality of the manager. He must be well enough acquainted with the problems of his departments to lead the discussion as he is the only one who can see the organization as a whole. Unless he commands the situation, personal feelings will creep in, the discussions will center around the department

which has the strongest head, and the weaker department heads who need the help most will remain silent. A program should be planned in advance by the manager.

Planning All Classes of Work. All classes of office work can be planned and scheduled by a specialized unit. Theoretical and technical workers usually think that their work cannot be organized. This is not true, and furthermore this type of worker needs the most help. The technical workers will probably have to furnish an outline of their work, but the specialized unit can lend them the benefit of general rules of organization.

Reports and Statistical Data. The preparation of operating figures and reports, accounting reports and statistical data can be speeded up by planning and scheduling. In order to compile a report it is often necessary to obtain information from a number of different sources. Unless the various units supplying the data can produce their information at the same time, the report cannot be completed. An important executive report is often held up for days because one unit has failed to supply its part. Perhaps the other units have worked overtime and their effort is thus wasted.

Planning and Scheduling without Bonus and Incentive Plans. Accurate scheduling can be obtained without the aid of bonus and incentive plans. Most clerks take a pride in accomplishment. The selection of the right personnel, together with the personality of the department head which shows leadership and wins cooperation, will obtain as lasting results as any specialized form of payment.

Rush Orders. Rush orders should be investigated and reduced to minimum. They arise sometimes from necessity, but more often because of inefficiency or wrong perspective. A head of department in an insurance company persuaded all the service departments such as mailing room, Photostat Department, etc., to handle her work as rush orders. The system relieved her of having to exert any pressure on her own clerks. We are all acquainted with the department head who never starts his reports on time and then always rushes the stenographic department or requires them to work overtime. Where rush orders are found to be necessary they should be handled without interfering with the regular routine. Sometimes a utility section can be utilized for that purpose. Careful planning and scheduling will eliminate most of the rush orders. As a rule, the work of the service departments should be handled in the order of receipt. When a department head insists, however, that his work must be rushed through and asks that other work be halted for him, the supervisor of the service department should consult the manager as to the value of each requirement. Each department head understands the need for his own work only, and the manager must determine the priority.

The Peak Load Problem. Fluctuations in the amount of business coming in are handled in different ways. The classic example of that problem is in the Massachusetts companies who write compulsory automobile insurance. On account of the compulsory law they have to write most of their policies Jan. 1, or Apr. 1.

The best way to handle the situation is to organize the work in such a way that the part that requires technical knowledge is handled by the permanent

clerks and the routine work can be undertaken by the staff of temporary clerical workers. In one company in Boston where such a problem existed, each of their policy typists had not only to type the policy but had to look up the rates in the automobile manual and calculate the premium. During the peak load period it was not possible for temporary clerks to do the job correctly. The solution was simple—the routine was divided into two parts:

1. Selection of rates and calculation of premium.
2. Typing the policy.

It was possible thereafter to hire temporary clerks to type the policies. All the permanent clerks were instructed in the rating routine.

THE CONTROL OF OUTPUT IN OFFICES

BY WALLACE CLARK, *Wallace Clark and Company*

The control of output is the chief responsibility of the executive in charge of an office. He may be able to write more letters and better than any of his subordinates, he may be an expert in the handling of orders or the preparation of reports, but that is not the kind of ability which distinguishes a good office manager. The reason for putting him in control over other men is because of his ability to get work done.

In the dark ages of management the method of getting work done was through fear. The manager's favorite weapon was threat of discharge and he depended on fear of loss of income to stimulate his employees. Fortunately this primitive type of management has become the exception rather than the rule.

During the last decade emphasis was placed on stimulating production by paying employees according to the amount they produced. This point of view is also changing and managers today regard it as merely a matter of fairness to reward those who produce more than the average. This change is a shift of emphasis from increasing production to simple justice to men.

The interest of management is now focused on a third method of getting work done, that is, removing obstacles which prevent workers from doing their best. This method is based on the belief, first, that all employees *want to make good on their jobs*, and, second, that it is the *task of the manager to help those under his control to make good*.

The better understanding of man and his mental processes, brought about by the discoveries of modern science, has rendered untenable the old idea that it is natural for a worker to shirk. We have learned that his desire to create, to reap the benefits of his toil, and to think well of himself, is more powerful than his propensity to soldier. We therefore know that if a man does not do a fair day's work, it is not due to anything inherent in his nature, but to some other influence.

The manager of an office accordingly desires to find out what influences make it difficult for an employee to make good on his job or, in other words, the obstacles which prevent him from doing a fair day's work, but he is often uncertain as to how to go about it. Shall he make frequent trips through the office, talking to the various department heads and all of the employees under

their charge? If the office is large it will be impossible to make the rounds often enough to keep in touch with conditions, for serious troubles are seldom on the surface and a few moments' conversation will not reveal them.

It is obvious that a manager cannot diffuse his energies in this way and must have some method or procedure which will automatically bring to his attention those conditions most seriously interfering with the desire of his employees to make good.

A Method of Locating Obstacles. The first requirement of such a method must be, above all, to indicate movement. Nothing in modern industry is static. The work of an office or manufacturing plant is composed of moving forces. Sales, production, stocks on hand, and prices are never stationary for long at a time—there is a continual ebb and flow and the movement of each has an influence on the others. It is comparatively easy to note the movement of work through a shop by following the material in its progress from one operation to another, but in an office it is more difficult. To a casual observer there seems to be only a multiplicity of papers drifting from one place to another, yet it is these papers, either forms or letters, which represent work—in fact, they are the only tangible evidence of it.

In every office there are two main streams of work with many tributaries. In a company which both manufactures and markets a product, one of these streams flows from the customer through the sales force and the office to the plant, while the other stream flows from the plant through the same channel to the customer.

It is the task of the office manager to control the movement of these streams of work. Orders, for instance, must come in and go straight through instead of wandering around and possibly finding a permanent resting place in some pigeon hole.

In order to establish an effective control of output the office manager must:

1. Measure the rate of flow.
2. Compare that rate with what has been decided upon as a satisfactory rate.
3. Find out what retards the flow of work and remove the obstacles.

Control in an Order Department. The application of this procedure to an order department may be taken as a concrete example. The office manager studies the work with the head of the department: orders of only one type are handled; they are translated into shop terms, checked for completeness and accuracy, and typed on sales order blanks. The orders received average 100 per day and the department is provided with the requisite number of employees and the equipment necessary to handle this volume of work.

The office manager asks the department head to send him a report at the end of each day giving the following information:

Number of orders on hand at beginning of day.
Orders received during day.
Orders put through.
Orders left over at end of day.
If 100 orders were not put through, the reasons why.

It will be seen that this daily report shows the actual rate of flow in the "number of orders put through," the desired rate in the figure 100, and the obstacles which prevent the attainment of the standard enumerated as "reasons why." In the "Orders on hand at beginning of day" and "left over" the office manager can see whether work is piling up or decreasing and can accordingly add employees to the department or transfer them to other work.

In such a daily report there is presented to the office manager the salient facts in regard to the progress of work through one of his departments. If that progress is not satisfactory when compared with a predetermined standard, the obstacles are automatically brought to his notice. He is thus enabled to concentrate his attention on the things which most seriously interfere with the daily work of those under his control.

Similar reports may be secured from other parts of an office. When there is a receiving department separate from the stockroom, it is the task of the person in charge of it to receive packages and deliver them to their proper destinations in various parts of the office. Accordingly his daily progress report would be as follows:

Packages on hand at beginning of day.
 Packages received.
 Packages delivered.
 Packages undelivered at end of day.
 Reasons for non-delivery.

Stenographic Department. In controlling the work of a stenographic department it is the aim of the person in charge to get into the mail each night all the letters dictated during the day. Accordingly the report of a head stenographer would be as follows. In this case actual figures are used:

Number of lines on hand at beginning of day	180
Lines dictated	2,504

Total	2,684
Lines finished	2,624

Left over at end of day	60 lines
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Reason for work left over: Mr. Black dictated ten letters after four o'clock.

It is obvious that there will be many reasons for such work being left over: a typewriter might be out of order; one or more stenographers absent; dictation given too late in the day; an unusual amount of work; not to mention a variety of things which interfere with individual output. These are the things which the head stenographer needs to bring to the attention of the office manager, for, if they are left to occasional reports in conversation, little will be done to prevent their recurrence.

Filing Department. There are certain parts of the office where it is burdensome to report on all of the work done, as in a Filing Department, where it would require too much time to count all of the papers filed. In this case the daily report would show how many papers are unfilled at the end of the day.

These may be divided into orders, correspondence, reports, etc. and the reasons shown separately for each division.

The examples given will serve to show the form which these daily reports of progress take and it will be easy to understand how the method may be applied to the work of correspondents, of traffic, purchasing and mailing departments, the supply stockroom, and even to the janitor, house carpenter, painter, electrician, and other employees engaged in the maintenance of an office building.

Charting the Progress of Work. Where the office is large and the manager has a good many departments to look after, he will find it burdensome to go over all of these reports each morning and will have one of his assistants enter them on a Gantt progress chart. Such a chart covers a two-week period; the different departments or divisions are listed on the left side and each morning the information contained in the daily reports is charted, the daily space representing what should be done in a day, lines showing the actual performance, and the reasons for falling behind being indicated by symbols.¹

On a single sheet of such a chart the office manager notes the progress made in every section of his office and his attention is directed to those parts of the work which are least satisfactory. He is thus enabled to make the best use of his time and to maintain a more effective control over the output of his office than is possible without some such method of promptly getting at the facts in regard to movement of work and the obstacles which interfere with its progress.

Kinds of Obstacles. It was stated at the beginning of this paper that the chief responsibility of the manager is to control the output of his office and that the best way for him to do this is to help those under his control to make good. Daily reports of progress were then outlined, which throw into high relief those things which prevent employees from doing a fair day's work. Let us now consider the problems which confront him in his attempt to remove these obstacles.

The manager finds that many delays are caused by things which obviously should have been avoided by the management: appliances or furniture may be in need of repairs or not suited for the present purpose; working conditions may be unsatisfactory; information received from other individuals may not be accurate or conveniently arranged; instructions may be incomplete; or there may be interruptions. These obstacles and others of the same nature occur frequently, but once they are known to the manager, no great difficulty is encountered in their removal.

When lack of progress is due to the physical condition of employees, remedial measures are taken, but it is somewhat more difficult to get at the obstacles in the minds of individuals.

An employee may be incapable of acquiring the necessary knowledge to do the work assigned to him. This often happens even if care has been taken to test his mental capacity before he was employed. On the other hand, he may be capable but without the necessary training. His work may not be sufficiently interesting to hold his attention.

¹ See Progress Chart of Office Work, "The Gantt Chart," by Wallace Clark, p. 96, Ronald Press Co.

An employee may think that his job is not good enough for him and that it belittles him in the eyes of his associates. He may be dissatisfied with his present position because it does not seem to give him opportunity for development or lead to promotion. He may feel that his wages are not commensurate with the importance or amount of work he does. It is true that the average person is more interested in development and promotion than in wages, but he resents it when the firm profits by his development and does not share with him.

An employee may be worried because he does not feel secure in his position. He may be resenting criticisms which he believes to be unfair. When unskilled laborers resent the treatment they get, they throw down their tools and quit work, but an office employee does not react in the same way. He goes on with his work, at least to all outward appearance, but his mind is occupied with other things and work immediately decreases in volume and errors multiply.

The attention of an employee may be distracted by events in his life outside the office.

Removing Mental Obstacles. The manager knows that mental attitudes cannot be changed by official orders, and that in order to alter conditions of mind which slow down individual output, he must understand some of the more positive sides of the natures of employees to which he can appeal. A young man is particularly interested in increasing his earning power and will grasp eagerly at anything which he believes will help him. The chief interest of an older man, on the other hand, is in maintaining the position and income which he has already attained and he will welcome anything that will increase his security. There is no age limit separating these two kinds of men—when a man loses interest in increasing his earning power and fixes it on security, he is no longer young.

Those women who are in business only for a few years seem to be most interested in their present incomes and in pleasant working conditions. Those who are in business permanently may be appealed to on the same grounds as men.

The average office employee, at least during the first few years of his business life, likes variety in his work. It is true that there are some who prefer monotonous tasks, which leave their minds free for reverie or day dreams, but in such cases it is better not to indulge this propensity. A manager should therefore provide variety in the tasks assigned to employees and infuse into them as much interest as possible.

An office worker has "a taste for effective work and a distaste for futile effort." He likes to see the results of his work and is always interested in knowing the part which his routine plays in the business as a whole. As a rule the more he knows about the history and aims of a company, the more pride he takes in his work.

Office workers are usually ambitious to learn more about business and to hasten their advancement into positions of responsibility. A wise manager therefore takes pains to stimulate the ambition of his subordinates by discussing with them their future plans, the special knowledge they will need and where it can be secured. Promotion is, of course, the greatest stimulus

to ambition, although it is sometimes as effective to tell an employee frankly why he cannot be promoted.

When changes are contemplated, the manager does not wait for records of low production to indicate that an employee resents the change, but before the new method is installed he points out to those affected how the changes will benefit them. He knows that most of them are in the office because they have to earn a living and that it is natural for them to think first how a certain thing will affect them and secondarily how it will affect the company. A manager finds his employees only mildly interested in the amount of money the firm will save by the adoption of any method, but, when he convinces them that they themselves will be benefited, he meets with interest and cooperation.

One of the great sources of satisfaction to a human being is the creation of something new or the development of something better than has existed in the past. Understanding this the manager develops initiative in those under his control by encouraging them to go ahead and do things on their own responsibility. He knows that they will get some things wrong, but every mistake, if handled properly, means a distinct advance and each constructive suggestion received from an employee indicates an active mind concentrated on his work.

In making out daily reports of progress such as have been described, workers place in the hands of the one to whom they are responsible the key to their minds. If this information is used to drive them, no beneficial results will be secured, but if a manager believes that it is his task to help employees to make good and concentrates his attention on locating and removing the obstacles which stand in their way, work will be done on time, quality and accuracy will be improved, costs will be low and employees will be contented and interested, in short, he will have developed an effective method of controlling output in offices.

METHODS OF COMPUTING AND CHARGING OFFICE COSTS OF OPERATION

BY H. J. TAYLOR, *President, The Club Aluminum Co.*

In many large offices the only costs of operation accumulated are total periodic figures covering operating expenses. These figures give the office manager and other company executives information as to the total of payroll, rent, depreciation of equipment, miscellaneous overhead, insurance, telephone and telegraph, and other expenses. If the total of these expenses has decreased from period to period, the office manager knows that a reduction of total office expense is being made. However, he does not know in what particular units the economies have been effected. It is quite possible that some units are operating at a greater expense, while extraordinary economies are being effected by other units in the office. Unless some means of measuring the operating costs of the individual units in the office is devised, it is impossible to give credit where credit is due. It is also not possible for the office manager to know in which units operating expenses are increasing in

order that he may be able to analyze the work of these units, and make an effort to reduce expenses.

In measuring the results of the work of any individual unit in an office two things must be taken into consideration. First and foremost is the efficiency of the unit as expressed in the type and effectiveness of the work turned out by the unit. The particular unit under consideration may have charge of field work, and the effectiveness of the work of the unit is, therefore, measured in the results shown in the field work under its supervision. If it happens to be a sales division, the effectiveness may be measured in volume of sales. If it happens to be the distribution division, the effectiveness may be measured in stock turnover and reduction of inventories. The other factor that must be considered in arriving at the efficiency of the unit is the cost of performing the particular work which the unit has assigned to it.

For instance, it is quite possible that an office unit might double its working force and, as a result, show an increase in the effectiveness of its work in the field. However, when the increase in the costs of operation of the office unit is taken into consideration, it may be that net economy has not been effected. On the other hand, if the office sales division is able to increase its effectiveness in the field as shown by increased sales volume and at the same time lowers the cost of operating the office unit, it is quite evident that the unit has increased its efficiency at reduced cost.

Briefly stated, the reasons for calculating and distributing figures as to the cost of operating the respective units in the office might be as follows:

1. In order that office executives may have information as to the economy exercised in the various units in the office and thus be able to reward in a fair and equitable manner through promotion in rank and salary increases those unit heads and individual members of units who have been responsible for increased efficiency at a decreased cost.

2. In order that each unit head may know exactly what the cost of operating his respective unit is and, also may be able to measure in this manner the results and effectiveness of the work of his unit in terms of its cost.

3. In order that an effective control of the cost of operating the office may be effected, and that figures accumulated may be used in budgeting the cost of operating the various units in the office.

Control of Costs in Jewel Tea Company's Office. Table 1, which is the control sheet used to distribute the various costs of operation among the respective units, shows at the head of the columns the different classifications of the costs of operation.

1. One will note that the different departments and the units in these departments are listed in the first column on the left-hand side of Table I.

2. In the second column are listed the *payroll charges to the various units*. The payroll charge for each unit is taken from the payroll figures which are compiled in the payroll unit, in accordance with a list of the employees working in each unit and the length of time each works during the period. The clerk in charge of the "cost of operations plan" accumulates the time worked by each worker in the respective units from the assistant office manager who controls placement of personnel in the office. A form is used

by the assistant office manager for informing the clerk in charge of the cost of operations plan as to transfers, releases, or employment of office employees.

3. In column 3 on the control sheet are placed the charges for *space occupied* by the various units in the office. To determine the charge applicable to each unit for space occupied, we first reduce the total periodic rent to a cost per square foot. The amount of space occupied by each unit is determined, and this figure is multiplied by the square foot rental. The result is a periodic charge to the unit for space occupied. In case a unit makes a reduction in the number of workers, the unit is released from the charge for the space occupied by the desk at which the worker sat. If this space is not immediately assigned to some other unit, it is carried as a charge to a unit specified as "general." The total of the charge for space to general then gives us the total charge for space not being utilized in any one period.

The various units of the office naturally try to economize as much as possible on space, but in order to avoid a "cramped" condition in any unit, a minimum of four feet for aisle space back of each desk is required. As each unit head knows exactly what the cost of the space occupied by his unit is, we have found that the unit head is very much interested in utilizing the space used by his unit to the best advantage.

4. Column 4 in Table I shows the charge against each unit for *depreciation of equipment*. These figures are determined by ascertaining the value at which equipment used by each unit is carried on the chattel ledger in the general accounting unit. By use of the company depreciation charge of one per cent per period, we then determined the charge to be made. When the plan was put in operation, a complete inventory was made of the capital assets in the office and each unit head was given a statement of the equipment charged to his unit. The clerk in charge of the cost of operations plan keeps a record of all equipment, and is informed by the assistant office manager on a form provided for this purpose of any transfers of equipment from one unit to another, or of equipment sold or junked. The assistant office manager also informs the cost of operations plan clerk of placement of all new equipment received in the office.

The unit head is held responsible for the condition of the equipment assigned to him. His tendency is to see that good care is taken of the equipment in the unit, in order that it will not become worn out and require replacement. If new equipment is required before the old has been totally depreciated on the books, the unit will be charged with the loss on the old equipment as well as with depreciation on the new. The tendency is also to be careful in requisitioning new equipment. The unit head naturally does not wish to have the charge of depreciation increased and, therefore, will not requisition equipment unless he feels a real need for same.

5. In the Jewel Tea Co., Inc. office we have a central stenographic unit and have an installation of fifty dictating machines. There are nine transcribers in the central stenographic unit and three typists. The *charges for transcription of correspondence* and other material dictated through the dictating machines are distributed in column 5 on the control sheet. The central stenographic unit is considered as any other unit in the office in accumulating costs of operation. The classification of the cost of operating

TABLE I.—HOME OFFICE COST OF OPERATIONS—CONTROL. OPERATING PERIOD FOUR WEEKS

(1) Unit	(2) Pay- roll	(3) Space	(4) Depre- ciation	(5) Edi- phone	(6) Typ- ing	(7) Com- puting	(8) Inter Unit	(9) Over- head	(10) Super- vision	(11) Plant Files	(12) Total	(13) Base	Economy Exercised	
													(14) Over- Red Under- Black	(15) Accumu- lated
1 Dept. A Unit 1	...	66.56	10.66	30.64	5.37	75	.89	62.17	...	...	177.04	182.51	5.47	8.66*
2	466.00	54.79	12.87	...	3.96	8.08	...	51.15	225.94	11.57	834.96	749.48	85.48*	304.56*
3	602.00	99.84	12.45	...	.57	...	3.56	93.24	291.89	...	1,103.55	1,331.06	227.51	1,075.70
4	268.00	56.32	6.22	73.70	...	...	...	52.59	129.92	...	586.75	962.87	376.12	566.27
5	779.00	87.04	15.15	...	...	140.81	...	81.29	377.72	3.37	1,484.38	1,520.75	36.37	1.37
6	1,276.45	124.15	30.06	102.00	24.30	101.17	...	115.94	618.90	13.68	2,406.85	2,407.33	68.68	43.90*
7	566.00	35.84	11.28	3.20	101.70	62.67	...	33.47	274.44	.54	1,094.14	1,442.31	348.17	1,804.53
8	1,071.15	92.16	19.02	23.25	8.19	426.76	131.70*	86.08	519.36	14.27	2,128.54	2,337.93	209.39	547.56
9	624.00	70.66	4.69	13.49	20.06	24.91	...	65.99	302.56	...	1,126.36	1,277.79	151.43	496.60
10 Total Dept. A	5,652.60	687.36	122.40	251.28	164.15	765.75	127.25*	641.92	2,740.73	43.43	10,942.37	12,212.03	1,269.66	4,134.91
11 Dept. B Unit 1	...	49.16	3.65	...	...	...	36.19*	45.89	...	...	62.51	98.72	36.21	36.57
12	1,110.00	89.60	15.86	337.57	55.32	40.01	30.89	83.68	538.20	.76	2,331.89	2,563.49	231.60	1,379.31
13	850.00	69.38	18.10	...	...	...	...	64.79	412.15	6.79	1,421.21	1,475.90	54.69	165.70
14	382.00	54.53	7.03	145.79	2.83	27.56	...	50.93	186.21	...	855.88	914.87	58.99	280.18
15	...	17.92	3.39	18.11	9.61	...	...	16.72	...	...	65.75	64.90	.85*	23.57
16	396.00	119.81	8.05	...	...	...	...	111.89	192.01	.95	828.71	850.88	22.17	181.23
17	656.00	67.58	4.13	...	...	...	2.83*	63.11	318.07	...	1,108.06	1,134.69	28.63	121.00
18	696.00	139.24	25.94	159.37	5.65	3.77	8.40	137.24	338.44	12.15	1,528.20	1,554.34	26.14	100.88
19 Total Dept. B	4,092.00	607.22	86.15	660.84	103.41	71.34	27	574.25	1,984.08	20.65	8,200.21	8,657.79	457.58	2,288.44

the dictating machine and typing units is shown on line 36 of Table I. Dictating machine transcription charges to the various units are based on a cost per line unit basis. The entire production of the dictating machine unit is divided into the total cost of operating the unit for the period and an average cost per line is arrived at. The number of lines of dictating machine work transcribed for each unit during the period is then multiplied by the average cost per line and the total amount to be charged is thus ascertained.

The distribution of the charges for dictating machine work to the various units has resulted in a very marked reduction in the volume of lineage of the various units. The reduction is obtained mostly by a decrease in the length of the letter, but some of it is attributed to discontinuance of unnecessary letters, some of which were written before units were charged for transcription.

In order to assist the unit head in reducing dictating machine transcription charges, we have prepared figures which show the efficiency of the various dictators in dictating. This information is accumulated by arriving at the time necessary for the transcriber to transcribe the dictation of the various dictators. The dictators are then listed according to the degree of cost for transcription, and the unit head is given information as to the rating of the various dictators in the unit in the efficiency of their dictation.

6. The *typing charges* are shown in column 6. These charges are for typing which cannot be charged on a line basis such as form statistical reports or financial statements. A cost per hour is computed in the same manner as is used in computing the charge for computing work, namely, by accumulating the number of hours used during the period on typing work and the total charges for the typists who perform the work. As the typists are in the central stenographic unit, the periodic charges for the operation of this unit are combined with those of dictating machines as shown on line 36 of Table I.

7. The *charges for computing work* are shown in column 7. All computing work is charged on a time unit basis. At the close of the period, we determine the number of hours during which the several operators worked. The total number of hours worked during the operating period divided into the total cost of operating and computing units, gives us the average cost per hour for computing work. This average unit cost multiplied by the number of hours of work done for each unit gives us the charge for computing expense to each unit in the office.

The economy and efficiency of the central stenographic and the computing units are measured in a different manner than those of the other units in the office. In the case of dictating machine transcription work, we measure the efficiency and economy exercised by the average periodic cost per line of the work turned out by the unit. If the average periodic cost per line decreases we know that greater economy and efficiency have been exercised in the operation of this unit. We have the record of each operator covering her daily line production. We, therefore, know approximately how much each operator contributes to the economy effected by the unit.

The efficiency of the computing unit is measured by accumulating results on specific jobs. We have uniform branch records on which the same amount of computing work is done periodically. By keeping a record of the number of these forms assigned to each operator and to the computing unit

as a whole on these jobs, we are able to arrive at the approximate efficiency and economy exercised by the group and by each operator. On account of the fact that so many different types of work are done by the computing unit, it is at present not possible to use a better method of measuring the unit cost of work done in the unit other than the average per hour cost for work done.

8. In case a unit releases a worker for work in another unit or in case work which is normally assigned to a particular unit is done for that unit by another unit, a debit and credit charge is made on the cost of operations control records to cover the *interunit work* done. These charges are shown in column 8 of Table I. It will be noted that some of these charges are listed in red and others in black. The red figures are credits for work done for other units and the black figures are debits for work done for the unit by another unit.

Figure 1 shows the form used in accumulating information on the interunit work done in the office. This form is self-explanatory.

To Office Manager
Dr. <u>Unit 2 Dept B</u>
Cr. <u>Unit 8 Dept A</u>
Work started <u>10/1/26</u>
Work completed <u>10/4/26</u>
Number of hours consumed <u>25</u>
Work done by <u>\$ 142</u>
Nature of work <u>Analysis of cost</u> <u>of Automobile operation</u>
Approved by <u>John Doe</u>
Head of unit for which work was done
Unit Cost <u>\$ 12356</u>
Total Cost <u>\$ 30⁰⁰</u>
Approved <u>W. G. Tron</u>
For Office Manager

FIG. 1.—Interunit work.

The unit cost of interunit work is arrived at by dividing the total number of hours worked by the members of the unit into the total cost of operating the unit. In this manner we arrive at an hourly unit cost of work for each unit in the office. Since we have given credit for interunit work we have found that considerable saving is made by the unit head having an incentive to release any idle worker for work in other units. As shown on line 39 of Table I, the total interunit work for the four-week period was \$333.11. It will be noted that the debit and credit charges in column 8 for interunit work balance. We have found that interunit work, which was practically unheard of in the office before we installed the cost of operations plan, has now amounted to a figure more than equal to the total cost of handling the cost of operations plan.

9. *Overhead expenses* are charged to the various units in column 9 of Table I. Overhead expenses are indirect expenses for items such as light, heat, water, equipment, repairs, telephone, telegraph, exchange, and postage. Charges for overhead are computed on a basis of the square feet occupied by the various units as compared with the total office space. In other words, if one unit occupies 10 per cent of the total space and if the total "overhead" charge for the entire office is \$1,000.00, the charge applicable to this unit would be \$100.00. Any decrease in space occupied naturally brings about a decrease in overhead expense.

10. *Charges for supervision* are shown in column 10 of Table I. Supervision charges are computed in the following manner:

The total "pay roll" as charged in column 2 is subtracted from the total of the executive and general office payrolls. Fifty per cent of this figure is then arbitrarily considered to be the amount that should be charged to "supervision of the home office," the balance being arbitrarily set for "plant and field supervision." This amount is then divided among the various units in the office in the ratio of

- a. The average salary paid to the worker in each unit to the average salary in the entire office.
- b. The number working in each unit to the number working in the office.

In other words, the factors of the number working in each unit and the average salary paid in each unit are used in determining the charge to each unit for "supervision." While the total amount which we distribute to "office supervision" is an arbitrary amount, we believe that we have arrived at a fairly equitable manner of distributing the arbitrary figure. By decreasing the number of employees working in his unit, the unit head automatically decreases his "supervision charge" as well as the charges for pay roll, space, overhead, and depreciation of equipment.

11. In column 11, are placed the charges for *space occupied with files* in the Chicago plant by the respective units. This charge is made on a basis of the number of square feet occupied by the files and the total of these charges is equal to the charge in "general accounting" made by the plant against the home office for the total space occupied by home office files.

12. Column 12 shows the *total periodic charge* against each of the units in the office.

On lines 10, 19, 25, and 34 are shown the *total costs of operation* for the respective departments in the office.

13 & 14. The *economy effected by the various units* in the office is arrived at by comparing the base as shown in column 13, with the total cost of operation as shown in column 12. The difference of these two figures is placed in column 14. A red figure designates that the unit has operated at a total cost of operation above the base figure. A black figure designates that the unit has operated below its base during the period under consideration. The base is arrived at by taking the average cost of operation during previous periods. For instance, the bases for the last six periods of 1926 are arrived at by finding the average cost of operation for each unit during the first seven periods of the year.

15. In column 15 is placed the accumulated amount of operation cost below or above the bases of each unit for the operating year up to and including the current period. The total of column 14 which amounts to \$1,737.51 equals the total economy effected by the office during the current four-week period while the total of column 15, which amounts to \$7,370.82, represents the accumulated total amount for which the office has been operated under the bases as set.

Date Aug 25 1926

To: Office Manager

Information, statistics, or records, which have formerly not been part of the regular routine of the Dept. of Number 8 unit have been requested by John Brown of the Dept. of Number 1 unit

The following is a description of the work, including its source, how it is accumulated, and its purpose. Procedural Preparations of report which will show record of total purchases - by branches - stems purchased - cost source form - Temporary report for 3 periods ..

Is proposed work to be transferred from another unit, or is it entirely new? _____

If transferred, from what unit? _____

(weekly)

Estimated time for doing the work (periodically) 45 hrs. min.

Signed John Doe

Head of the unit which is to do the work, if approved.

(week) \$ 18.00

Estimated cost per (period) \$18.00 (To be filled in by office manager)

The head of the unit which is to do the work, if approved, will report to the office manager at the end of the first week or period during which the new detail was worked, the exact number of hours and minutes that the additional work required, in order that the cost of operation base of the units affected may be adjusted

All new work, before it is commenced, should have the approval of the office manager; before his approval can be secured, the estimated "time required" must be filled in.

Approved John Brown Head of unit requesting work

Approved W. H. M. Fox Office Manager

Exact time required 45 hrs. 30 min. (To be filled in after detail has been worked first time)

Exact cost \$17.40 To be filled in by Office Manager

Date work started 8/1/26

Date base adjusted 8/1/26 Temporary

FIG. 2.—Analysis of proposed new or transferred work.

On line 39 is shown the figure amounting to \$1,182.52 which represents the base adjustments made during the period. Adjustments are made both on a temporary and permanent basis. On line 40 is shown the net reduction without allowing for adjustments, which totals \$544.99.

We are able to balance the figures of each column in Table I with our general accounting records. This gives us a direct proof on the accuracy of the figures.

From: Office Manager

To: Head of Unit 8, Dept. A.

Subject: Current Period Expenses-Cost of Operation
in Home Office

The names of the units, which, during the first _____ periods accumulated, qualified for the HOME OFFICE EXPENSE HONOR ROLL, are listed below in the order of their standing:

- | | |
|--------------------|---------------------|
| 1. Unit 7-Dept. A. | 6. Unit 5-Dept. C. |
| 2. Unit 3-Dept. A. | 7. Unit 9-Dept. A. |
| 3. Unit 4-Dept. A. | 8. Unit 4-Dept. B. |
| 4. Unit 2-Dept. B. | 9. Unit 8-Dept. A. |
| 5. Unit 4-Dept. D. | 10. Unit 6-Dept. B. |

The expenses incurred in the several factors which entered into the cost of operating your unit during the current and preceding periods, are listed below for your comparative purposes. For your comparative purposes the figures for the total expenses and the base figures are also listed.

Unit 8, Dept. A.

	Current Period	Preceding Period		
Pay Roll	\$ 107.15	\$ 105.37		
Space	92.16	92.16	Base	\$ 23.20 ⁵³
Depreciation	11.02	19.02		
Ediphone	23.25	17.04	Adjustment	\$ 17 ⁶⁰
Computing	426.76	365.09	(Temporary)	
Typing	8.19	20.65	(Permanent)	
Inter-Unit	131.70	122.58		
Overhead	86.08	81.29		
Supervision	519.56	557.05	Base	\$ 23.37 ⁹³
Plant Files	14.27	19.27	as adjusted	

TOTAL \$ 2,128.54 \$ 2,129.36

Economy exercised period \$ 209³⁴
(Red over base-black under base)
Accumulated economy exercised \$ 547⁹⁸

* Compiling Statistics as further explained on attached schedule
* Red figures

OFFICE MANAGER

FIG. 3.—Report to unit heads on cost of operating units.

Control of New Work. The control of new work shown in Fig. 2 has tended to decrease the amount of new work started in the office. The person requesting the new work is now able to measure the need for this work in terms of its estimated cost, and in many cases we have found that the person requesting the new work did not believe the work would cost more than a

fourth of the actual cost. After obtaining the cost figures in a number of cases, the person requesting the work would decide that the results obtained from doing the new work would not warrant the expenditure necessary to work the new detail.

At the end of the year, we have an approved new work sheet covering all of the new work that has been started in the office. You will notice on line 39 a total of \$1,182.52, new work done in the office for the period. At the end of the year, in making the annual report we have available a new work sheet approved by the head of the unit who requested the work, covering all new work.

Progress Reports. The unit heads are kept informed as to their progress in connection with the cost of operating their respective units by means of a report which is given to them covering each period's performance. The form used for this report is Fig. 3. The ten units out of the total of thirty in the office, whose accumulated economy exercised is of the largest per cent to the accumulated base, are placed in the order of their performance on the "home office expense honor roll." The various expenses connected with the cost of operating the units are listed on this form together with the various expenses for the previous period for comparative purposes. The base of the unit is also placed on this form together with any adjustment temporary or permanent which has been made during the period. The economy exercised by the unit for the period is the difference between the total cost of operations and the base as adjusted. If the total cost of operations is greater than the base, the economy exercised is placed in red. The accumulated economy exercised is also placed on this form showing the result for all periods of the operating year to date.

Results. While everything connected with the procedure in accumulating the cost of operation of the various units may not be the very best accounting procedure, at the same time the real test of the plan is whether or not it is getting good results. Our results under the operation of this plan have been very encouraging. We have had a gradual decrease in the cost of operating the office. The economies effected have made it possible for us to return some of the savings to office employees in the form of salary increases. In making salary increases the efficiency of the work of the individual in the respective units is taken into consideration, also the degree to which the individual has contributed to economies effected in the unit.

BUDGETING OFFICE EXPENSE

BY HADAR ORTMAN, *Director of Operations and Finance, Meredith Publishing Company*

Everyone recognizes that manufacturing costs should be very easy to estimate. And, if one further analyzes why he rightfully thinks so, he will find that it is because of the scope of experience that usually has been recorded and the insurance usually provided for obtaining certain results—all due to the existence of control procedures. As a result, manufacturing operations, for many years, have been executed under effective expense budgets. But

expense budgeting, whether it concerns manufacturing or clerical expense without other forms of control, would be of very little value. The expense budget is but a means to an end. It is but the index by which many activities of the operation may be judged and a method of correlating certain other vital information.

There must be available some recorded history of actual performance in order to estimate intelligently future performances. The more detailed these records, and the longer the period they cover, the more accurately the results can be estimated.

There should be some way to check, periodically, actual against budgeted performances. Here, of course, the real value of a budget is brought forth, because through these comparisons the executive is enabled to judge the effectiveness of subordinates' performances and his own, and to prevent future wastes.

It is advisable to provide some additional procedures whereby wastes, beyond budget standards, are prevented.

It is desirable to translate the plans reflected in departmental budgets into long terms and short term plans covering material and equipment purchases, labor requirements, space demands, method requirements, financial demands and other plans for auxiliary activities.

It might be of advantage to provide controls whereby operation executives will know immediately when standards are not reached, without waiting for reports from cost or accounting records.

Let us summarize the uses of various types of control from a budget standpoint.

- A. Provide the basis for budgeting.
- B. Provide means of accomplishing budget goals by:
 1. Providing periodical comparisons.
 2. Providing correlation of plans with other functions.
 3. Providing means of preventing undesirable deviation from budget.
 4. Providing means for immediate corrective action.

Cost accounting, planning, scheduling, wage incentives, job analysis, routines, and other forms of control are all aids to budget or in making budgets effective. However, even though these types of control are, theoretically, always desirable, they are not all essential to effective budgeting and sometimes actually not practical. When such controls are installed, it is usually because of direct benefits which will be obtained; the advantages from the standpoint of budgeting are usually not considered as deciding factors.

There is close correlation between budgets and other types of control. This discussion is limited, however, to the relationship between budgeting and other controls, as providing the basis for and periodical comparisons with budgets. Furthermore, even though all the control procedures more or less serve in this way, this discussion is limited to but two of the controls—accounting and cost accounting.

But before going into a further discussion of budgeting, it is probably advisable to devote a brief discussion to office work from an accounting standpoint.

The office worker is the staff member of the business army. His is the tremendous responsibility of planning the operations, making certain of their accomplishment, checking their efficiency. The entire business rotates around his desk.

Office work is a staff function, or a service function, to the major functions of a business. It comprises writing or interviewing, computing, classifying, and filing. Within these classes there are, as you all know, a great number of different operations.

From the standpoint of executive control, these clerical functions are either made a part of the major functions or separated from them, and, consequently, from an organization standpoint, made into separate service units. In some organizations both types of executive control may be found. In both cases the clerical work may be subdivided as to routines or specialized operations. For instance, an order handling department might comprise all operations connected with the clerical handling of orders. The correspondence division, on the other hand, might control all the clerical operations connected with answering inquiries, except the stenographic or filing work which might be centralized for the whole company or a certain part thereof. In other words, there might be some units serving other units which themselves serve major functions.

In our organization the clerical functions, with a few exceptions, have been separated from the major functions which they serve. We also have centralized certain operations into specialized units. It has proved to be a very successful plan. It is of fundamental importance that accounting, from the standpoint of control, be based on a logical division of responsibility, as this usually can be effectively translated into the accounting method and other types of record control. Even though an organization is rarely built to suit an accounting system, the work of constructing such a system serves effectively as a check on the effectiveness of the organization line-up, and usually opens the executive's eyes to opportunities for changes which will be of advantage.

Accounting and cost accounting, on which budgeting must be built, and through which it is of value as a control, should be shaped entirely to the organization pattern. A separate set of accounts or cost records should be kept for each organization unit, giving the department, division, or section head periodical pictures of the cost items incurred by him in such detail as may be required. As a matter of fact, under certain conditions, it might be advisable, from an accounting standpoint, to segregate the department accounts of one executive into several accounting divisions. This latter applies, for instance, when a considerable amount of clerical work is performed under the direction of the head of the major department. It is often desirable, under these conditions, to establish the clerical work as a separate division on the books.

Furthermore, the relationship between the various service units and the major functions they serve should be accurately reflected in the books of the company. The accounting procedure should provide not only a recorded classification of incurred expenses, but also a fair method of transferring office costs from the office departments to the accounts of the departments

for which work has been done. Very rarely is it advisable to charge office costs directly to the profit and loss statement.

In this way each service department, division, or section represents, from the standpoint of accounting, a business by itself, selling its service to other organization units. Expenses incurred are charged against the division. Credit is given the division for service rendered and charged to the departments for which work has been done.

Credit for work done can be computed in different ways. For instance, a clerical service unit operating for the benefit of one major function only might have a set of accounts on the books, but the total against this unit might be charged, at the end of each month, into the accounts of the major function. Another type of procedure might be in connection with some clerical service unit operating for the benefit of two or more major functions. An arbitrary division of the total cost might be established or it might be concluded that it should be distributed based on the number of orders or the amount of income, or on the number of accounts handled, or on some other similar basis. It might be that each of the major functions will allow a certain amount for work to be done by this clerical unit, which amount is credited to this service unit and charged against the major function concerned. The difference between the allowed amount and actual amount would show whether or not the clerical task was performed at anticipated cost. Sometimes charges are made to other departments, based on number of hours' work for each of these departments, at a predetermined hourly rate. Finally, based on available cost records, a unit price for each type of work handled may be established and used to credit the clerical unit and charge the major functions served. In some cases, you may find it advisable to use two or more of the mentioned methods for crediting a clerical department for work done.

It is quite obvious that the last is the fairest method for distributing service charges to customer departments. It is the method used by us in all clerical units of any importance. However, for some units, due to the multitude of tasks handled and the limited volume of each, we have decided that it would involve too much clerical work to follow this method, and consequently, have resorted to some of the other arbitrary bases mentioned for computing credits. In one research unit where a large group of clerks is employed, the hourly method is used, due to the large number of tasks handled.

From the standpoint of our discussion, we are interested in this question of redistribution of charges only so far as it provides methods of controlling the effectiveness of the clerical work performed and so far as it determines definite aspects of divisions of responsibility for office expense.

In order to obtain a concrete basis for discussing budget, let us consider a specific unit—let us say an order handling department.

Assume that four different types of orders are handled. Type one requires operations *a, b, c, d, e, f*; type two requires operations *a, c, e, f*; type three requires operations *a, d, f, g*; and type four, operations *a, b, e, f, g*. Before making up our budget, let us obtain the figures on the books for the order handling department for the last year. Let us assume that they are as follows:

TABLE I.—ORDER-HANDLING DEPARTMENT

Payroll.....	\$50,000
Rent, light, and heat	2,900
Depreciation, insurance, and taxes.....	4,000
Postage, telephone, and telegraph.....	1,500
Supplies.....	6,000
Repairs and maintenance.....	800
Personnel service.....	2,500
Operation control charge.....	3,100
Sundry expense.....	200
Work done by other divisions.....	5,000
Total.....	\$76,000

Our order handling department head, and perhaps his superior—the office manager—meet with the general manager to discuss budgets. The general manager says, "Our order handling cost for last year was entirely too high, and we certainly cannot spend any more for it next year." And what is the result? The budget amounts decided upon are the same as the actual costs incurred during the last year, without much further discussion.

The year goes by and we are again in the general manager's office. The high official's facial expression promises a hot meeting, as he looks over the result of last year's operations, which shows as follows:

TABLE II.—ORDER-HANDLING DEPARTMENT

	Budget	Actual
Payroll.....	\$50,000	\$54,000
Rent, light, and heat.....	2,900	3,000
Depreciation, insurance and taxes.....	4,000	4,000
Postage, telephone, and telegraph.....	1,500	1,200
Supplies.....	6,000	6,000
Repairs and maintenance.....	800	600
Personnel service.....	2,500	3,000
Operation control charges.....	3,100	3,000
Sundry expense.....	200	200
Work done by other divisions.....	5,000	5,000
	\$76,000	\$80,000
Loss.....		\$ 4,000

Again the manager opens the conversation. "Last year I told you that you had spent too much money on order handling. I finally allowed you the same amount in the budget, but you have spent even more this year. Rightfully, I should fire both of you and the whole department. What good does it do us?" Our clerical executives realize that something must be wrong somewhere; they know that they have worked harder than ever, had better help, had less idle time, and still the "old man" is not satisfied.

They review the figures. It is true that the payroll shows \$4,000 above budget and undoubtedly the largest share of the inefficiency, if any, must be in this item. They notice \$500 more for personnel service for which, of course, they are not responsible. That is the personnel manager's job, and why should they get blamed for him? In this way they discuss each item and decide between themselves that, for at least some of the charges, they are not to blame.

Furthermore, how about the number of orders handled? Did they handle more orders last year than the year before? They have to handle them as they come in, but the number is controlled by the sales manager. They proceed to investigate and perhaps spend weeks worrying and digging for facts, meanwhile allowing the cooling-off period for the general manager. Then, perhaps, they finally succeed in squaring themselves with him. However, they insist that next year's budget should be made up quite differently.

It is quite obvious that the volume of work handled is the basic item to consider when scrutinizing office expense statements. Supplies, for example, include pencils, pens, ink, forms, etc., which must be used in larger quantities as larger numbers of orders are handled. Postage, telephone, and telegraph, covering postage on invoices sent out, telephone calls for local and long distance customers certainly should increase as the number of orders increases. Repairs and maintenance should vary the same way. The more work handled, the more wear and tear is given machinery and equipment.

Charges from other service divisions may include typing of invoices from central stenographic, perhaps computations of invoices from the central calculating division. Certainly, these charges would vary with the volume of orders.

The largest percentage of payroll certainly should be estimated in direct proportion to orders handled. Of course, that does not hold true of supervisors' salaries, which are consistent, independent of volume.

Charges for executive control, including charges for the order handling department's share for the cost accounting, scheduling, etc., usually do not vary considerably from year to year, and certainly should not vary with the number of orders handled. Anyway, the order handling department has no supervision over this work.

Rent, light, heat, and personnel are also fixed amounts, more or less unaffected by number of orders handled, and all under the supervision of executives outside of the order handling department. In reality, they represent book charges made by the accounting department.

It is clear from this discussion that certain expenses are fixed and do not vary with the volume of work handled and at the same time usually do not represent expenses over which the order handling department head has any control. On the other hand, some items vary in direct proportion to volume of work handled, over which items, also, our order handling department head has direct control.

It represents a very definite improvement, from the standpoint of budgeting, to get these figures rearranged so as to show variable costs separated from fixed costs. Table III shows the result as applied to the order handling

statement previously shown. The first section of accounts represents variable, and the second fixed expense. Note that supervisory payroll has been taken out of the regular payroll account and classified among the fixed items.

TABLE III.—ORDER-HANDLING DEPARTMENT

Payroll.....	\$50,000
Work done by other divisions.....	5,000
Postage, telephone, and telegraph.....	1,200
Supplies.....	6,000
Repairs and maintenance.....	600
Sundry expense.....	200
Total.....	\$63,000
Fixed payroll.....	\$ 4,000
Operation control charges.....	3,000
Personnel service.....	3,000
Rent, light, and heat.....	3,000
Depreciation, insurance, and taxes.....	4,000
Total.....	\$17,000
Grand total.....	\$80,000

TABLE IV.—ORDER-HANDLING DEPARTMENT

	Last year	Basis	New budget
Payroll.....	\$50,000	+20 %	\$60,000
Work done by other divisions.....	5,000		6,000
Postage, telephone, and telegraph.....	1,200		1,440
Supplies.....	6,000		7,200
Repairs and maintenance.....	600		720
Sundry expense.....	200		240
Total.....	\$63,000	Same	\$75,600
Fixed payroll.....	\$ 4,000		\$ 4,000
Operation control charges.....	3,000		3,000
Personnel service.....	3,000		3,000
Rent, light, heat.....	3,000		3,000
Depreciation, insurance, taxes.....	4,000		4,000
Total.....	\$17,000		\$17,000
Grand total.....	\$80,000		\$92,600

If we are to make up a budget for the coming year on the basis of this statement, how should we go about it? First, of course, we want to know the number of orders we are expected to handle during the coming year. Assume that we handled 500,000 last year, and it is anticipated that we shall handle 600,000 next year. Would it be fair to add 20 per cent to the figures shown as incurred expenses for last year? The fixed charges should not

increase 20 per cent. Also 20 per cent added to each one of the variable expenses would mean that the same efficiency would be obtained in the order handling department for handling the anticipated number of orders. Last year the variable costs amounted to \$63,000, and the fixed costs amounted to \$17,000. Consequently, we estimate for the coming year \$75,000 for variable costs and \$17,000 for fixed costs.

Let us now go through the year and get the final statement. It shows \$78,000 variable and \$17,500 fixed.

TABLE V.—ORDER-HANDLING DEPARTMENT

	Budget	Actual	Over + under -
Payroll.....	\$60,000	\$63,000	+\$3,000
Work done by other divisions.....	6,000	5,800	- 200
Postage, telephone, and telegraph.....	1,440	1,300	- 140
Supplies.....	7,200	7,000	- 200
Repairs and maintenance.....	720	700	- 20
Sundry expense.....	240	200	- 40
Total.....	\$75,600	\$78,000	+\$2,400
Fixed payroll.....	\$ 4,000	\$ 4,000	
Operation control charge.....	3,000	3,200	+ 200
Personnel service.....	3,000	3,200	+ 200
Rent, light, heat, and power.....	3,000	3,100	+ 100
Depreciation, insurance, and taxes.....	4,000	4,000	
Total.....	\$17,000	\$17,500	+ 500
Grand total.....	\$92,600	\$95,500	+\$2,900

Can the management say that this apparent additional cost is due to lack of efficiency? Perhaps through an investigation it was found that instead of 600,000 orders, the order handling department actually handled 660,000. Of course, our order handling department head does not control the number of orders handled. Actually then the variable costs should have been approximately \$83,200 instead of \$78,000. Consequently it would mean that the efficiency of the department had been operated above standard instead of below.

Assume that the number of orders handled corresponded to the estimated number. Can the management then fairly accuse the order handling department of lack of efficiency? By no means, because the percentage distribution of types, and consequently the work required, might have been quite different; over these conditions, naturally, the order handling division head has no control.

We have previously pointed out that deviations between budget and actual charges made to the order handling department for personnel work, etc.,

cannot be laid to the order handling department head. This eliminates \$500, for which we cannot hold our department head responsible.

Assume now that the management has in some way convinced the department head that he has lost at least \$2,000 of their good money. What is the department head going to do? He can reasonably assume that the major share of the loss is in the payroll account. The other items are of comparatively small importance. He has seven different operations and fifty clerks under his jurisdiction. There is no way for him to tell if all or one or two of the operations are performed below standard, or if a few or all of his clerks are lagging behind. The only thing he can do is to assume that everything and everybody is wrong, thereby irritating some individuals whose performance might have been very satisfactory, and perhaps should have been praised. An accounting statement does not provide sufficient detail to enable our order handling head to decide on what corrective action, if any, is necessary. An accounting statement, even though revised from its usual form by separating fixed from variable expense is not sufficient then to control intelligently the costs of handling orders.

Assume that we introduce in this scheme a procedure for crediting this department with a certain amount for each order handled. By so doing, we

TABLE VI.—ORDER HANDLING DEPARTMENT

	Budget	Actual	Over + under -
Payroll.....	\$60,000	\$63,000	+\$3,000
Work done by other divisions.....	6,000	5,800	- 200
Postage, telephone, and telegraph.....	1,440	1,300	- 140
Supplies.....	7,200	7,000	- 200
Repairs and maintenance.....	720	700	- 20
Sundry expense.....	240	200	- 40
Total.....	\$75,600	\$78,000	+\$2,400
Fixed payroll.....	\$ 4,000	\$ 4,000	
Operation control charge.....	3,000	3,200	+\$ 200
Personnel service.....	3,000	3,200	+ 200
Rent, light, heat, and power.....	3,000	3,100	+ 100
Depreciation, insurance, and taxes.....	4,000	4,000	
Total.....	\$17,000	\$17,500	+\$ 500
Grand total.....	\$92,600	\$95,500	+\$2,900
Credit.....	\$92,600	\$85,000	
Loss.....		\$10,500	

can readily see that we have eliminated one factor of uncertainty, over which the department head has no control, namely, the number of orders handled. Assume in the previous example that we specify 15.4 cents as the average

costs for handling an order during the coming year. This is based, as you remember, on an estimated cost of \$75,600 variable and \$17,000 fixed expenses for 600,000 orders. At the end of the year we came out with \$78,000 variable and \$17,500 fixed. Assume that the order handling credit shown on the book amounts to \$85,000, or an apparent loss of \$10,500. What conclusions can be drawn? The credit is arrived at by multiplying the number of units handled with the predetermined standard cost. By dividing the credit with this standard cost, we find that we actually only handled about 535,000 orders instead of the anticipated 600,000. This shows that during the year we spent \$10,500 more than the budget for handling 65,000 less orders. Does this mean that our order handling department wasted \$10,500 of the company's money? Not necessarily.

We previously agreed that the head of the order handling department was not responsible for the increased charge of \$500 for personnel work, etc. Furthermore, due to the fact that we handled a volume less than we anticipated, and for which we are not responsible, that portion of the standard costs which was planned to cover fixed costs, was not sufficient. Out of the 15.4 cents allowed per order, 2.8 cents was allowed for fixed costs. Multiply this figure by 535,000. We get \$15,000. The fixed charge amounted to \$17,500. In other words, we have now found \$2,500 over which our department head has no control, and consequently reduced the efficiency loss to \$8,000 for which we may hold our office head responsible. But, again, our order handling department head might defend himself by claiming that the unusual amount of complicated types of orders was responsible for this extra expense, and he might get away with it. Or assume that the management proved its claim that the department had been operated inefficiently, what guidance does our order handling head get from our figures as to where the sore spot is? None. And, we are back to the same picture again, namely, that additional controls are required.

Let us now consider this same order handling department and the same conditions under a plan similar to that which we use for most clerical departments in our company.

Our accounting books are arranged so as to segregate variable from fixed expense, and to allow work done on a standard cost basis. In addition to figures kept in our accounting books we maintain cost and production records covering clerical work very much the same as those found in most manufacturing departments.

Let us go back again to our example for the order handling department with four definite types of orders and seven different operations. In the cost books we will find an analysis of various variable costs by operations, arranged to show volume handled in each operation and, consequently, variable costs per unit handled in each operation. Please note that we do not distribute fixed expenses further on our cost reports as generally, from a managerial control standpoint, they scarcely warrant further work, assuming, of course, that the accounts in the general ledger are as detailed as they should be.

As payroll always is the largest expense item in the clerical department, particular attention should be given so that accurate divisions and fair means of measurements may be obtained on this item.

Other items can be handled in different ways, depending on the amount involved and the work required for making different types of distributions.

Let me suggest a principle which is quite frequently neglected. Assume that in one order handling department we have a payroll of \$20,000 and a supply expense of \$2,000, and in another department of the same kind, a payroll of \$500,000 and a supply expense account of \$50,000. The fact that in both cases the supply expense is only 10 per cent of the payroll does not justify a decision to use an arbitrary method of cost distribution in both cases. In the larger office it might pay to have a number of more elaborate controls of the supply items, because of the total amount at stake. In the smaller office it might be sufficient to total the full amount in one column and divide by the total number of orders handled, independent of types of orders and operations. In the larger office it might be well not only to distribute the supply item to each operation, as consumed, but also to split the amount charged to each operation by types of materials.

In the construction of any cost accounting plan it is obvious that for each item there is a practical limit, determining the extent of distribution and computation which should be made.

As a result of this discussion it can be seen that we sometimes must add several unit costs in order to obtain the cost per unit performed in each operation. Sometimes we have only payroll cost per unit of operation available, while other costs are distributed per unit of final product and independent of operation. But in any case, through our cost records it is possible to obtain the cost for each type of orders handled by adding certain unit operation costs and, perhaps, some unit costs which have been considered the same for each order, independent of type.

In budgeting the order handling expenses under this plan, the logical starting point is with the cost and production records.

TABLE VII.—OPERATION A

	Number units	Number hours	Production per hour	Wage cost per hour	Wage cost per unit
January	50,000	2,500	20.0	\$0.50	\$0.0250
February	60,000	2,856	21.0	0.52	0.0247
March	70,000	3,414	20.5	0.53	0.0258
April	60,000	2,900	20.7	0.52	0.0251
May	50,000	2,222	22.5	0.51	0.0226
June	40,000	2,032	19.5	0.49	0.0251
July	35,000	1,750	20.0	0.50	0.025
August	30,000	1,364	22.0	0.52	0.0236
September	35,000	1,667	21.0	0.52	0.0247
October	40,000	2,000	20.0	0.51	0.0255
November	45,000	2,093	21.5	0.50	0.0232
December	50,000	2,270	22.0	0.53	0.0240
Total	565,000	27,068	20.9	\$0.51	\$0.0245

A careful review should be made of the past experience, as shown by these records, for the purpose of determining fair standards for next year, as expressed in production, per hour and various costs per unit of work to be done in each operation.

TABLE VIII.—OPERATION A

	Number units	Number hours	Production per hour	Wage cost per hour	Wage cost per unit
January.....	50,000	2,500	20.0	\$0.50	\$0.0250
February.....	60,000	2,856	21.0	0.52	0.0247
March.....	70,000	3,414	20.5	0.53	0.0258
April.....	60,000	2,900	20.7	0.52	0.0251
May.....	50,000	2,222	22.5	0.51	0.0226
June.....	40,000	2,032	19.5	0.49	0.0251
July.....	35,000	1,750	20.0	0.50	0.025
August.....	30,000	1,364	22.0	0.52	0.0236
September.....	35,000	1,667	21.0	0.52	0.0247
October.....	40,000	2,000	20.0	0.51	0.0255
November.....	45,000	2,093	21.5	0.50	0.0232
December.....	50,000	2,270	22.0	0.53	0.0240
Total.....	565,000	27,068	20.9	\$0.51	\$0.0245
Next year standard.....			22.	0.51	0.023

Whatever improvements or changes are contemplated should be kept in mind in setting these standards. After having reviewed these standards, the various unit cost allowances are added so as to obtain a standard variable cost allowance for each type of order handled.

The next step is to determine the amount of fixed charges. As most of these are distributed charges from other organization units, they are supplied to the order handling department by the accounting department. Fixed payroll is, of course, estimated by the clerical department. In order to simplify this matter we predetermine an amount for each of these charges, which amount is charged, each month during the budget year without change, to each of the departments served.

There are many ways, as you know, to distribute overhead of the type we have called fixed expense. Due to the fact that these charges are the same, independent of volume of work handled, it is necessary to anticipate volume of work to be handled for the purpose of computing the standard fixed cost allowance per unit. Consequently, it is necessary to obtain from the customer departments estimates as to volume to be handled. When these are obtained, the total fixed charges are computed as additions to the variable standard costs per order, based on the payroll item involved, the variable cost involved, or perhaps as an equal amount per order handled.

TABLE IX.—STANDARD COST COMPUTATION

Cost item	Class of orders			
	I	II	III	IV
Operation <i>a</i>	\$0.023	\$0.023	\$0.023	\$0.023
Operation <i>b</i>	0.032	.....	.....	0.032
Operation <i>c</i>	0.016	0.016	.....	.....
Operation <i>d</i>	0.045	.....	0.045	.....
Operation <i>e</i>	0.005	0.005	.....	0.005
Operation <i>f</i>	0.015	0.015	0.015	0.015
Operation <i>g</i>.....	.....	.....	0.011	0.011
Total wage.....	\$0.136	\$0.059	\$0.094	\$0.086
Other variables*.....	0.028	0.028	0.028	0.028
Fixed†.....	0.039	0.017	0.027	0.030
Standard cost.....	\$0.203	\$0.104	\$0.149	\$0.144

* Based on number of orders..... (600,000)

† Based on payroll..... (60,000)

The standard costs which have thus been computed will be used for crediting the order handling department and charging the customer departments.

One may be surprised to learn that this also completes the budget work, in so far as the order handling department is concerned. What we have done is to budget unit costs rather than totals, by classes of expense or accounts, but without classification. The reason, of course, is obvious.

If we had budgeted the total payroll item, supply item, postage, etc., for the year, a comparison between the budget figures and actual would have shown the sales manager's estimate of volume times the office manager's estimate of unit costs against the actual expenditures for actual volume handled. Such a comparison, as previously pointed out, would not indicate a degree of efficiency.

The standard costs are submitted to the customer departments and are based on their estimates of volume to be handled; based on these standard costs they compute and include in their budget estimate, under the account of "cost of order handling," the expected charges for this work. To them these represent service purchased at a contracted price, and they are responsible for them in the same manner as materials or other services purchased for the use of their departments.

In starting the cost records for the new year, the standard unit costs and the production standards are entered at the top of the respective columns.

Each clerk is keeping a time report showing time spent on each operation. Production records are kept by clerks or supervisors, distribution made of payroll, supplies, etc., so as to conform with the line-up of the cost analysis in our cost records. At the end each month these figures are entered in the cost book.

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TABLE X.—OPERATION A

	Number units	Number hours	Production per hour	Wage cost per hour	Wage cost per unit
Standard.....			22	\$0.51	\$0.023
January.....	60,000	2,500	24	0.52	0.022
February.....	70,000	3,333	21	0.51	0.024
March.....	80,000	3,480	23	0.53	0.023
April					
May					
June					
July					
August					
September					
October					
November					
December					

The actual production per hour and the actual cost of various kinds per unit handled are computed and entered under their respective standard. We now are receiving an automatic comparison between standard unit costs and actual unit costs each month.

The accounting department makes its charges to the various accounts. All the cost distributions in the cost books are balanced against these charges. Credit is given the department for which work has been done on the basis of standard cost for each type of order.

Another refinement has been put into the plan. The variable and fixed costs are shown separately on the accounting department statement, with a subtotal for each and a grand total. In order to obtain comparative figures, a variable credit based on the variable unit costs, a fixed credit based on the fixed unit costs and a total credit, are computed and shown on the statement. We are thus computing a variable credit based on the variable unit cost as well as a total credit.

Thus we obtain an automatic overall check on the efficiency of each department.

Also, based on the elementary unit cost, the cost figure corresponding to each amount and based on the actual volume handled can be computed and shown opposite the actual expenditure on each account, which gives a periodical control as to the effectiveness of each expenditure in comparison with the standard allowed.

Assume now again that we have completed the year, or a month for that matter, and the statement shows variable \$78,000, fixed \$17,500—total \$95,500; variable credits \$70,000, total credits \$85,000—loss \$10,500. From this statement we know that \$8,000 has been lost due to lack of efficiency, and \$2,500 of fixed charges has not been absorbed, due to lack of volume.

When bringing this matter to the attention of the order handling department head, he can, by referring to the accounting statement and the cost

TABLE XI.—ORDER HANDLING DEPARTMENT

Payroll.....	\$63,000
Work done by other divisions.....	5,800
Postage, telephone, and telegraph.....	1,300
Supplies.....	7,000
Repairs and maintenance.....	700
Sundry expense.....	200
Total.....	\$78,000
Fixed payroll.....	\$ 4,000
Operation control charge.....	\$ 3,200
Personnel service.....	3,200
Rent, light, heat, and power.....	3,100
Depreciation, insurance, and taxes.....	4,000
Total.....	\$17,500
Grand total.....	\$95,500
Credit.....	\$85,000
Variable credit.....	70,000
Fixed credit.....	15,000

TABLE XII.—ORDER HANDLING DEPARTMENT

	Budget	Actual	+ Over - under
Payroll.....	\$56,000	\$63,000	+\$ 7,000
Work done by other divisions.....	5,000	5,800	+ 800
Postage, telephone, and telegraph.....	1,300	1,300	
Supplies.....	6,800	7,000	+ 200
Repairs and maintenance.....	700	700	
Sundry expense.....	200	200	
Total.....	\$70,000	\$78,000	+\$ 8,000
Fixed payroll.....		\$ 4,000	
Operation control charge.....		3,200	
Personnel service.....		3,200	
Rent, light, heat, and power.....		3,100	
Depreciation, insurance, and taxes.....		4,000	
Total.....	\$15,000	\$17,500	+\$ 2,500
Grand total.....	\$85,000	\$95,500	+\$10,500

records, tell us on which operation losses have been made, and how much of the loss is due to payroll, supplies, or other expense items. Furthermore, he is able, through a simple computation of time and production records, or through perpetual production summaries kept by individuals, to tell what individuals were responsible for the losses.

It gives our department head a concise guide as to where his efforts are required to bring about a better appearance of his statement. It provides a

definite and logical answer to management inquiries. It gives our department head an opportunity, in a tangible way, to show his effectiveness on his job—an opportunity welcomed by all good executives.

Conclusion. The average accounting record is not sufficient for the purpose of judging the efficiency of a clerical department. Fixed and variable charges should be segregated for the purpose of facilitating budget and control through accounts and to segregate and place responsibility. The most adequate way of providing control through budgets is by supplementing accounting with cost records. These will provide unit cost figures by operations, type of material, etc., enable us to set standards for each elementary cost unit and facilitate effective executive action through the resulting comparisons.

The most accurate way of crediting a service division is on the basis of standard costs, determined on the basis of detailed cost records. Controls of effective value are obtained if, on the accounting statement, the credit corresponding to the variable cost is shown separately. Still better control can be obtained by showing for each major expenditure the amount allowed *versus* the amount actually spent, calculated from actual volume handled and allowed unit costs.

By selling services to other departments, if a standard cost method is used, the responsibility for the volume can be placed with the customer where it belongs. The budgeting of office service units will primarily consist of predetermining operation standards of efficiency.

It might be of interest to insert here an opinion as to the proper procedure for handling over or under absorbed office expenses. During the budget year, they should be accumulated as profits or losses for the individual departments. At the end of the year any departmental profit or loss should be credited or charged to the customer departments, based on the amount of charges made during the year. As a rule standard costs, particularly standard variable costs, should not be changed during the year. The standard fixed cost might be changed if a considerable change in anticipated volume is experienced.

From the discussion above, it might seem that the last described method of budgeting is applicable for all types of clerical departments and operations. From a theoretical standpoint that is so. Wherever there is an office department of any size handling routine operations this procedure is practical and extremely advantageous. However in case of small departments with the multitude of tasks and comparatively few clerks, the combination of accounting and budgeting is sufficient. Of course cost records, individual time reports, material distributions, periodical reports of production from each individual, together with the computation work, require a considerable amount of time. The amount of work involved in a procedure and the advantages to be gained must, of course, be carefully weighed against each other.

In the average sized organization, departments like accounting, personnel, methods, scheduling, cost accounting and others of the administrative or functional staff type do not, as a rule, warrant a cost accounting or standard cost method. Such units, however, as central stenographic, central filing, central calculating, correspondence, order handling, billing, multigraphing, etc. do, in most cases, warrant such a plan. In case a standard cost method cannot

be used advantageously for crediting office departments for work done, the hourly basis is the next best method. For the purpose of distributing administrative and staff functional costs to departments benefiting from their work, any one of several bases might be used—for instance, the amount of payroll, number of people on the payroll, amount of sales, number of orders, or the like.

The importance of shaping budgeting and accounting procedures in accordance with the division of responsibility should be stressed repeatedly. It is extremely important to have the routine for making budget estimates conform exactly with the regular organization channels.

Let us assume that we have an executive organization chain composed of a general manager, department head, division head and section head. If a budget is to be made for a section the estimate should originate with the section head and be approved by the executives above in the order of the organization chart. Any change in a submitted budget which, let us say, the general manager would think advisable, should be discussed with his subordinate executives, down to the section head. A budget to be effective must be based on the mutual understanding of the whys and wherefores. It is just like negotiating with an outside agency and closing a contract when a mutual agreement has been reached in regard to the terms.

A budget computed by a budget director or an accountant is never as effective as it should be and certainly it does not aid in building up the feeling of responsibility, initiative and square-dealing on the part of the executive concerned.

It is important to obtain frequent comparisons between budgets and actual performances in order to accomplish predetermined goals. Reports originating in accounting and cost accounting departments should be submitted at least monthly. We can show on our monthly statements operating figures for the month as well as accumulative for the year.

The March statement shown reveals that our order handling department was operated above standard efficiency since the allowed variable cost is \$100 above the actual. The volume handled was more than budgeted and is shown by the fact that \$62 above actual fixed charges was absorbed. For the first three months the department has been operating below standard, as the variable costs have been running \$1,700 above the allowance. The volume has been practically equal to the budgeted volume, as shown by the figures for the fixed costs. The profit and loss for each type of variable expense is shown separately.

The frequency of the reports, the amount of information on each report and the number of copies to be distributed vary in each case. Remember, however, that possible uses and possible improvements in operations through these records should be weighed carefully against the work of preparing them.

Budgeting of office expense can accomplish several things and in working up the plan the purposes must be clearly kept in mind.

It can be designed to serve as an aid in controlling the financial policy of the company. Also it can be constructed to serve as a measure of work done by individuals and groups of individuals by specifying expectations and by providing a comparison between actual and expectation. It can be made to serve as a coordinator of the plans of the various units of a company and

TABLE XIII.—ORDER HANDLING DEPARTMENT
March

	This month			Accumulative		
	Budget	Actual	Over + under -	Budget	Actual	Over + under -
Payroll	\$5,600	\$5,500	—\$100	\$17,000	\$18,250	+\$1,250
Work done by other divisions.....	500	500	.....	1,400	1,600	+ 200
Postage, telephone, and telegraph....	100	100	.....	250	300	+ 50
Supplies.....	650	600	- 50	1,700	1,800	+ 100
Repairs and maintenance.....	25	75	+ 50	250	300	+ 50
Sundry expense.....	25	25	.....	100	150	+ 50
Total.....	\$6,900	\$6,800	—\$100	\$20,700	\$22,400	+\$1,700
Fixed payroll.....		333	.....		1,000	
Operation control charge.....		267	.....		800	
Personnel service....		267	.....		800	
Rent, light, heat, and power.....		258	.....		775	
Depreciation, insurance, and taxes....		333	.....		1,000	
Total.....	\$1,500	\$1,458	—\$ 62	\$ 4,500	\$ 4,375	—\$ 125
Grand total.....	\$8,400	\$8,258	—\$162	\$25,200	\$26,775	+\$1,575

as a part of the general planning of work that should be done in each organization.

The budget plan should be constructed so as to accomplish as completely as possible all three purposes. It will do so, provided it is properly tied up with other control procedures.

If improperly installed and operated, any type of control is nothing but red tape. In starting a method of budgeting, cost accounting or other control, it is always wise to begin with the items of primary importance, and, when the executives thoroughly know how to manipulate the new "tool," it is time to consider extending its use to items of secondary importance.

It might be said that an expense budget will do in the form of a systematic routine many of the things to which an executive, more or less unsystematically, would have to devote a large share of his time, if he did not have a budget. Consequently, the budget permits the executive to devote more time to improvements, instruction and other types of constructive work which are usually seriously neglected in most organizations, due to lack of time.

In a recent address, Mr. Dwight Morrow said, "It is often assumed that scientific inventions prevent misunderstanding. Machines, however, do not understand each other. Men may make a perfect machine, but it will still depend upon man himself whether the machine will be an instrument of understanding or misunderstanding."

Even though Mr. Morrow talked about machines, I am sure that he also referred to the various systems and procedures that govern action in our materialistic world. His statement certainly does apply to a budget procedure. It mechanizes, that is, it simplifies the executive function but its success as a profit maker and a morale builder depends entirely on the quality of the executive talent behind it.

CHAPTER IX

BRANCH OFFICE MANAGEMENT

BY W. HENRY SMITH, *Assistant Vice President, Retail Credit Company, Inc.*

The Scope of This Paper. This discussion considers the supervisory relationship of the home office to the branch office. By branch office management we refer to the establishment, organization and operation of branches from the home office, where the management group is centered. The paper does not treat the operations within the branch itself, at least not to any degree. The term "management" in the title does not refer to the manager of the branch but to the home office group charged with general planning, supervision and direction of the branch structure. The term "branch" is used to cover a field unit established by and under the direction of the home office. The manager is under supervision from the home office with sufficient authority in his own right to "hire and fire." Factories, warehouses, sales and distributing offices in general would fall under this classification, but the cases cited deal almost altogether with line branch offices which direct selling, credits, collections and office operations in general, as distinct from warehousing and manufacturing.

Basis of the Paper, a Questionnaire. This paper is based upon results secured from a questionnaire which was sent to about one hundred of the members of the American Management Association. Supplementing the answers received, a number of competent division or branch managers of several nationally known institutions were personally interviewed, so that in all, we have forty-nine thoughtful replies to the queries. The quality of the answers is of much more value than the quantity. The information represents a very good spread, most of the concerns furnishing data being recognized as leaders of their particular industrial or commercial groups. This, in itself, means a great deal.

TABLE I.—NATURE OF BUSINESS OF CONCERNS COVERED IN SURVEY

Key Number	Description
1	Insurance (life).
2	Importing, manufacturing, teas and groceries, retailing, direct to consumer.
3	Tanners—manufacturers of leather and rubber belting and specialties.
4	Sale of correspondence courses.
5	Manufacture, sale, and service of an office appliance.
6	Insurance—casualty, mutual.
7	Manufacture and sale of asbestos and magnesia products
8	Manufacture and sale of heating equipment.
9	Manufacturing and selling agricultural implements and tractors

TABLE I.—NATURE OF BUSINESS OF CONCERNS COVERED IN SURVEY.—(Continued)

Key Number	Description
10	Manufacture and sale direct to user—office appliances, folding machines, supplies.
11	Manufacture and sale of paints, varnishes, lacquers, to dealers and industry.
12	Manufacture and sale of advertising specialties of celluloid, metal, leathers.
13	Manufacture and sale of soaps and toilet articles.
14	General banking.
15	Selling company, general rubber goods.
16	Producing and distributing meat and dairy products through the retailer.
17	Reports on individuals—principally to insurance companies.
18	Manufacturing and selling corn products (sales organization).
19	Outdoor advertising—poster panels, paint bulletins, electric signs.
20	Casualty insurance (stock company).
21	Manufacturing suction cleaners.
22	Manufacturing photographic supplies.
23	Manufacturing, selling, and installing elevators and hoists of all kinds.
24	Manufacture and sale of tires and rubber articles.
25	Manufacture and sale of iron and steel sheets, plates and strips.
26	Financing sales of automotive products.
27	Marketing gas, oil, etc.
28	Manufacturing and selling of rubber goods.
29	Street car advertising.
30	Accounts—systems, management engineers.
31	Manufacture and sale of registering devices.
32	Manufacture and sale of cigars.
33	Manufacture and sale of an office appliance.
34	Manufacture and sale of pianos and musical instruments.
35	Manufacture and sale of phonographs and games.
36	Manufacturing, warehousing, and selling of glass.
37	Manufacture and sale of brushes.
38	Manufacture and sale of plate silver.
39	Manufacture and sale of sewing machines.
40	Chain grocery system.
41	Manufacture, distribution, and servicing of automobiles.
42	Manufacture and distribution of plumbing and bath fixtures.
43	Manufacture and sale of heating equipment.
44	Chain department store system.
45	Manufacture, sale and servicing of automobiles.
46	Manufacture and sale of abrasives.
47	Manufacture and distribution of heavy hardware—pipe, plumbing fixtures.
48	Publishers of technical journals—editorial, circulation and printing.
49	Insurance (life).
	Summary
4	Insurance companies.
5	Sale of food products.
4	Fabrics—rubber or leather.
3	Books or printing.
4	Office appliances.
4	Industrial chemical products.
6	Manufacture of machinery implements or metal products.
2	Finance or banking.
2	Special services.
2	Chain store systems.
2	Automobiles.
4	Household utilities.
2	Musical instruments.
3	Miscellaneous:
	Gas and oil.
	Photography.
	Advertising.

Establishment. Why a Branch Organization? In the past few years there has been a definite movement towards parent concerns establishing branches. The Commercial Service Company reported that for the month of August 1929 alone, 52 new chains and 937 branches were established. They may be factories, warehouses, sales headquarters, or complete, almost self-con-

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TABLE II.—NUMBER AND DISTRIBUTION OF BRANCHES

Key number	United States	Canada	Foreign	Key number	United States	Canada	Foreign	Key number	United States	Canada	Foreign
1	26	0	0	18	30	0	0	36	55		
2	78			19	40			37	157	19	14
3	27	1	5	20	30			38	9		1
4	24	1	12	21	14	1	3	39	26 agcys.	3	
5	78	8		22	3				10,000 stores,		
6	13			23	178	17	128		all agcys.		
7	59	4	3	24	56		7		Large cities		
8	29			25	9		10	40	400 stores		
9	33	8		26	55	8	24	41	21	0	0
10	80	5	11	27	8			42	75	0	0
11	80	10	5	28	46	20	18	43	30		
12	54	1	4	29	50	10	5	44	268	0	0
13	20	1		30	55		4	45	50 (8,000 dealers)		
14	3	287	37	31	10	2					
15	51	4	10	32	1,000			46	10	1	4
16	400	25	100	33	78	7	45	47	4 fac.	0	2
17	97	10	3	34	7B 35 Sub B				8 sales		
				35	265	5	15	48	8	0	1
								49	7		

TOTALS: Cos, 49; United States, 4,007*; Canada, 458; Foreign, 461. Average, 82 in United States.

* Not including agencies of companies 39 and 45.

Estimates of employee personnel in branches run almost 100,000.

Figures on home office personnel run over 37,000 with eight companies not reporting home office figures. This high home office figure includes employees in factories.

NOTE.—A few questionnaires were either incomplete or covered less than half a dozen branches and were not used in tabulations.

TABLE III.—MOTIVES FOR ESTABLISHING BRANCHES BY COMPANIES

Answers	Motives	Answers	Motives
44	Service to customer	9	Transportation
16	Accessibility of markets	7	Administrative facility of small units
14	Personal nature of service rendered		Accessibility of raw materials
14	Competition	0	Labor supply

NOTE.—Many companies checked more than one motive. This explains why the total of these figures exceeds 49, which is the number of companies covered in the survey. The figures opposite each item listed indicate the general use or non-use within the group. The same applies to other tables that follow.

1. Hand to mouth buying becoming a national merchandising policy since the war is one prime cause. The retailer refuses to carry heavy stocks. The

manufacturer and distributor must therefore carry ample goods to have them readily available. This means branch factories or branch warehouses and branch offices strategically located. This, however, is not a big factor in the group covered in this paper.

2. Accessibility of markets ranks high as a factor. Management is now under heavy pressure to get the business. Branches are located where the business is or is thought to be.

3. Competition comes in for its share—though this is less a factor than one might first think.

4. Costs have risen. Transportation is a heavy cost factor in many lines. To reduce it one form of branch is established.

5. The chief and most consistent reason, however, in establishing branches is "service to customer" and its related factor, "personal nature of service rendered." This is a far cry in corporate management from the good old trust busting days of twenty years ago. Service—the spirit of progressive American business.

Just what is meant by service to customer? It is not clear from the answers. Undoubtedly though, a service attitude is meant.

TABLE IV.—CHIEF DUTIES OF BRANCH MANAGER

Answers	Duties	Answers	Duties
44	Sales manager	10	Credit manager
18	General office supervision	3	Engineer
15	Service manager	3	Superintendent of plant

Quite frequently the manager combines one or more of these functions. This is nearly always the case whenever specialized departments exist in the office, such as credits, sales, service.

Duties of Manager. There is some correlation between the reason for establishing a branch and the chief duties of the branch manager. Since by far most of the companies reported service to customer as the impelling reason for establishing, so we find most of these branch managers either sales managers or at least having sales organizations in the branch. Customer service and contact go hand in hand with the sales field. Many who reported that the manager was sales manager, also indicate that he is a service manager as well, and that general office supervision is a prime factor of his job. However, the sales manager is often relieved of complicated office structure.

With this setting or background before us we can now more clearly take up a description of the field organization usually found in a branch structure.

The Supervisory Organization for Branches. From Table II it is evident that the average company listed has a high number of branches. A glance at Table V immediately shows that usually there is a supervisory unit between the home office and the line branches. There is generally a territorial division, i.e., branches assigned to a certain territorial headquarters. The

TABLE V.—GROUPING AND NOMENCLATURE

Q. Are several branches grouped under a supervisory zone—district division—territorial unit of some sort? 31—Yes. 15—No.

NOMENCLATURE

Answers	Name of unit	Answers	Title of man in charge
9	District	6	District manager
5	Division	6	Division manager
5	Territory	5	Vice president and assistant vice president
4	Region		
3	Zone		
3	Branch		
2	Departments		Regional manager, department manager, superintendent of agencies, director of agencies, branch managers are found in varying usage
1	Central Agency		
6	Have more than one group between home office and branch—as division, district, branch		

terms "district" and "division" are the favorite names for the intermediate supervisory offices. We find some organizations with many and far flung branches having two intermediate supervisory units between home office and branch. For instance, there may be zone headquarters in charge of vice president or assistant vice president; there may be three to eight zones in the United States and Canada. Each zone has two or more districts under district managers. Each district supervises several branches. Or nomenclature may be regional with vice president or assistant vice president under the regional headquarters, two or more divisions under division managers. Sometimes subdivisions or districts are under the larger divisions. All this is found before we reach the actual line branch office where the product is handled and sold.

In general, the home office prefers to establish territorial headquarters—5 or 10 perhaps—instead of endeavoring to supervise directly 75 or 100 branches. The reason for the trend is obvious. Home office supervisory power tends to break down when branches increase beyond twenty-five. It is too difficult to keep in close touch with what is going on in a branch, or at least, what should go on. The territorial grouping, with proper authority in territorial headquarters, is the logical answer. It is assumed that imposing supervision of this character is justified by more effective results of individual branches—otherwise cost is not justified. Given ten offices to supervise, the division manager ought surely to pay his way handsomely. Just how large a force he needs is a matter of results he gets and the functions he performs. Sometimes he is alone—a free-lance traveling supervisor. Sometimes he concentrates at his headquarters—a battery of staff operations, as training, accounting, credits, and collections—thus often relieving the individual branches which are left comparatively free, small, effective, and stripped for

action. The nature of the business and of the product are among factors in determining the machinery at territorial headquarters.

Probably it can be said that the closer the territorial or branch supervisory head to home office in rank or grading, the more is he a home office man in attitude. The closer he is to the top management group, the better he will reflect the ideas, attitude and policies of the management; the better he will interpret the spirit and desires of the management to the field. In some businesses, the management can afford to be farther from the firing line than in others. Where it is necessary for the outposts pretty thoroughly to reflect the management, it is essential in a large branch organization that one or more intermediate supervisory strata be established to interpret the spirit of the management throughout the field. This delegation of mission is necessary because the personnel of the management cannot directly cover the ground.

Occasionally we find no intermediate supervisory set-up in the field but find one in the home office. For instance, the operating vice president may have three assistants, each fully responsible for a third of the entire territory. Sometimes we find a territorial division in home office, together with a territorial division in the field. One cannot suggest any determining factor here, unless it be the multiplicity of the field units.

Home Office Organization for Direct Supervision of the Field. Tracing on back to the home office itself, there is usually one department or one executive who is the one focal point to which the field organization looks as their direct head. This does not mean that the field is limited in dealing with the home office through this one channel nor that other departments of the home office are required to deal with the field through this one outlet. It is the point of authority, however, through which operation instructions, critical or corrective management, are released, or from which approval must come for staff or functional departments to deal with the field on other than regular routine basis. It is the point to which the field may look in case of a conflict of home office instructions originating in different departments of the business.

TABLE VI

Q. Is there a direct line of supervision from home office to such zone or territorial manager and from latter on down to branch manager? 34—Yes.¹

Line of Authority. Almost without exception, the line of authority runs directly from the home office through the next stratum of supervision on down to the branch. Obviously a division manager must have line authority if he is given supervision of several branches. Authority commensurate with line responsibility is vital.

This line of authority does not, however, require all dealings through the field organization chart channel. The home office often deals directly with branch and vice-versa, but this is on routine operations. In matters of management, promotion, reprimand, the line channels are used—from home office to territorial headquarters—and from there on through sub-headquarters, if any, and from the latter on to the branches.

¹ Those who do not have intermediate supervisory units did not answer.

Operating. With this brief description of the usual machinery or organization used in operating the branches let us now turn to a discussion of just how this setup is employed by the home office or management. This is such a wide field we shall touch upon only a few elements.

These elements are:

1. Releasing important matters to the field.
2. Following up by the home office to see what action the field gets on matters released.
3. Judging the results or performance of the branches.
4. Centralizing or decentralizing office functions and certain clerical work.
5. Setting standards.
6. The degree to which the home office enters in the direction of sales and advertising.

1. *Releasing Important Matters.* Let us presume that most routine matters released from the home office to the field have been flowing through well-oiled grooves or channels; that they have been going out satisfactorily in a routine way. But now assume that a far reaching new idea, or a major change in plans, objectives or policies is voted by the management; how is it gotten out to the field?

TABLE VII.—RELEASING MAJOR MOVES TO FIELD

Q. How are new ideas and major changes in plans or objectives passed on to the branches?

Answers	Methods
39	Letter
28	Personal explanation of traveling representative
28	Instruction sheets
22	Publications
21	Memorandum

Other Methods: Bulletin, conventions, group meetings in field or home office, educational films.

The prevailing ways and means in sequence of their use are: letter, personal explanation of traveling representative, instruction sheets, memorandums. Group meetings and conferences—large, small, frequent, or infrequent—play their part. The conference, however, is frequently not used so much to teach as to set attitudes—get men sold on the main idea. They can get the *law* through instructions at the proper time. The conference is for *tempo*.

Just how general is the practice of organizations in releasing important changes through the same channels and by the same means that a volume of routine is released? Insufficient care in selling the management's ideas is costly, in direct ratio to natural inertia to change viewpoints. Home offices use clever thinking and novel planning to tell the public or the customer about this or that, and too often tell the organization itself in the same old humdrum way. One might even say that a large part of successful management is preliminary preparation for the acceptance of change. It might pay well to have an advertising specialist look over the media we use to tell the field organization.

Are not some things too important to entrust to installation by means of only a letter or memorandum? Do they not require personal or able explana-

tion; a time factor and delay? Yes, some—but a division manager or other traveling representative can cover eight to twelve well separated offices in four to six weeks if necessary.

It is obvious that a combination of these methods is the thing, and the answers indicate their frequent employment in such a fashion.

2. *Following Up.* Releasing matter to the field—whether stimulative or plain orders—is just chapter one of getting the job done. Chapter two is the follow-up.

TABLE VIII.—METHODS OF FOLLOW-UP

Answers	Methods
25	Personal visit of supervisory head, whether field or home office
7	Reports
7	Zone office traveling representative
5	Frequent audits
2	Annual audits
7	Follow-up memorandum or letter
2	Visits to home office
5	No follow-up, leave entirely to manager

NOTE. Also mentioned by individual companies are publications, continuous budgetary control, cooperation.

The various methods seem fully adequate as a group—taken individually, no one may be sufficient. They include reports from branch to home office or from branch to division headquarters and on to home office; great dependence is placed in the monthly report of sales and costs, also audits or surveys by special home office staff men who visit the branches; also by the division manager checking up when he makes his more or less frequent visits. Where the home office supervision of field is tight, the follow-up comes normally through a combination of these methods; where the division or branch manager is pretty much of a czar, the home office seems to release its rules or ideas and expect them to be carried out. In the latter case, how well are they carried out?

One management engineer in charge of a large divisional office with many branches under his supervision says: "Good management of many branches means knowing what they do and when they do it." If his principle is sound, this should provoke some comparison by those organizations who release their messages and thus consider those jobs done. Frequently the release is just the starter's gun for an effective operating department.

Throughout the discussion of operating, it is assumed that the channels of supervision have sufficient authority to get action and get things done when it is known what has been done or not done by a field unit or branch.

3. *Judging Results.*

The leading element in this weighing of the branch is "securing its share of expected business," (profit implied). This, no doubt, means holding old business as well as getting new business, as a high lapse ratio would undoubtedly run up branch operating costs and cut down profits from the branch. Holding old business is a pretty good key to service and performance—so as an index, this factor should rate high. The majority consider ease

of supervision, type and frequency of complaints, and turnover of personnel, factors in judging whether a branch is satisfactory or not—a sizable minority do not attach much stress to these three things—but rely on “holding and getting business and making profit.” Is it not possible that the latter standard used alone may mean some good bets are being passed up? A well-selected and trained personnel, making a smooth-running office and curtailing complaints, is undoubtedly a factor which creates more business and better holds old customers and makes more satisfactory profits. Attention to these things may be a means of raising returns now considered satisfactory into much higher brackets.

TABLE IX

Answers	Factors in Grading Branch
41	Securing its share of expected business
26	Ease of supervision
22	Type of complaints against it by customers
20	Turnover of personnel

Other Things Mentioned: Cost persistency of business; expand business through development of new avenues; development of personnel; contributing to main office information on trade conditions; profits made; inventory turnover and operating cost; capacity to control expense; ability to develop an organization; carrying out policies within and without the branch; number and quality of dealers; effective distribution of product.

4. *Centralization or Decentralization.* The larger the branch territory, the more intensely worked the territory allotted it, naturally the more clerical work devolving upon the branch. Thus we find that most organizations in the survey have decentralized clerical operations and such functions as billing.

TABLE X.—CENTRALIZATION OR DECENTRALIZATION

Q. Have you decentralized most clerical operations and such functions as billing, collections, purchasing, payment of bills, etc.? 29—Yes. 17—No.

Q. Or is the trend to retain all possible clerical work and secondary functions in the home office so as to leave the branch office as free as possible for accomplishing its main objective? 19—Yes. 28—No.

Two reported their organizations decentralized though their trend is to concentrate. This explains variation between the 17 and 19 above.

collecting, payment of minor current bills. One prime necessity for this is that the branch certainly knows local conditions far better than the home office and can make good with its trade or customers on these matters in working adjustments and extensions. Decentralization relieves home office of an enormous detail job which could not be so well handled as by the branch. Two factors that weigh in decentralization of clerical operations are:

a. *Nature of business and kind of product.* For instance, it would be better to decentralize billing and collecting for a small article sold in quantities to many customers in branch territory and especially where follow-up or repeat orders are frequent. Sales of fire engine trucks, on the other hand, would be billed and collected through home office—centralized handling.

b. Size and intensity of sales results of the branch territory. The larger the unit of territory and the higher the volume of individual sales, the more logical the set-up of office operations in branch.

So we find that even in a sales branch organization compromises have to be made, and the sales manager often finds that necessarily his job cannot be limited to sales stimulation but encompasses office and clerical operations which are the unavoidable results of sales.

5. Setting Standards. The setting of standards, both as to methods and as to costs, may be considered a logical function of operating and is therefore included in our discussion at this point.

TABLE XI.—STANDARDS

Answers	Items Standardized
45	Form of organization
44	Office methods
41	Operating instructions
23	Type of personnel
10	Size
8	Volume

NOTE: Type of building, equipment, store fronts, sales talks, training are mentioned as things standardized here and there.

A reference to Table XI will speak for itself as to the consistency with which standardization is practiced in one phase of branch organization or management or another. It is interesting to note that size and volume practically play no part in standardization. Within the individual company, form of branch organization, office methods, operating instructions meet with a high degree of standardization. Type of personnel, though much more of a variable than the definite elements of systems is often standardized so far as possible. My inquiries indicate that this so-called standardization of personnel is not a scientific standardization but rather rough general bases, sales managers are selected from tried and capable salesmen, the typical office managers from those well grounded in the accounting work. Age, education, physique evidently have little influence. Selections are based on general fitness.

The wisdom of standardization of the impersonal things is so apparent, it needs no argument of support. In brief, the practice provides ease of operation, flexibility of operating, ease of opening branches, no jarring of the customer situation or patronage. It also leads to savings on interchange of equipment and personnel.

TABLE XII.—UNIT OF EFFORT

Q. Is a standard unit of effort established for the business handled by the branches, so as to determine the number of people needed by an individual branch? (By 'unit of effort' is meant a measure, such as 1 employee per 10 cars sold; 1 employee per each 300 orders recorded, etc.)

Those using—13. Not using—34. Not reporting—2.

This term is here used to mean a measure of labor, a key to determine the number of people needed for proper organization of each branch. The device

is little used. Either cost accounting or payroll budgeting has not progressed to the point where the unit of effort is recognized as a pay roll control, or else the nature of this or that business does not lend itself to such fine spun cost analysis.

TABLE XIII.—RESEARCH

Q. Is a central research unit maintained in the home office for studying and solving problems of the branches? 38—Yes. 10—No.

Special work mentioned:

Statistics, problems of the trade, customers accounting problems, sales problems, branch operating problems, advertising and campaigns, educational efforts.

Research is such a household word that we need not go far into this. One form or another is generally used for the benefit of the branches.

TABLE XIV.—COST AND PROFIT

Q. Do you set up a certain percentage of profit as a quota for each branch office? 15—Yes. 32—No.

Q. Do you set general standards of cost as guides for individual branch costs? 32—Yes. 14—No.

Q. Is each branch required to operate on a self-supporting basis? 39—Yes. 8—No.

Q. Are the home office costs directly due to any single branch, as shown by the cost reports made for or by the branch, charged to that branch direct? 17—Yes. 25—No.

It is significant that we find few companies applying the principle of the first and fourth questions but second and third are quite generally followed. A deduction would be that branches are allowed considerable latitude in getting their financial results but that they must make a satisfactory profit—though not a standard profit. Perhaps local variations in markets—competition—personnel—make it unwise to compress profits of individual branches into a standard percentage per dollar. If this be true—a satisfactory profit will be above a standard here and below it there.

6. Sales. In the questions on sales which immediately follow, we again face an operating element, as they bring out the operating relationship of home office and branch on sales activity, especially as to direction or control on the part of home office.

TABLE XV.—SALES

Q. If your branch is principally a sales unit, does it carry on its sales activities largely independently of home office direction? 24—Yes. 22—No.

Q. Are sales quotas set by the home office for each branch? 36—Yes. 9—No.

Q. Does the branch office take a part in planning the advertising, or is this centered in the home office and controlled from there?

9 Have branches take part in national advertising plans

8 Branch offices take part in local advertising

32 Centered in home office entirely

The answers to the three questions here show that home office takes quite a hand in directing sales work, even though about half of the branches work independently of the home office. It is the job of the home office, however, to know potential yield of a territory and to set a quota of anticipated sales, and this is almost universally done.

Advertising is closely allied with selling. This is centered in and controlled from the home office. Branches are often consulted for ideas and for application of ideas. For instance, in a newspaper campaign, the branch can often select the proper time and character of advertisement best calculated to appeal to its territory.

Coordination—Elements of the Problem. We have outlined the general structure of the field organization and discussed several elements involved in the operating of that organization. This brings us to a third general division of branch management which we term coordination. Though really a vital part of operating it is given separate treatment because of its importance in any scheme of effective management of branches.

The lone branch seldom has a coordination job in so far as supervising another group is involved. The division or district branch has a coordination problem but a fairly simple one. The district manager is in full authority and can call for such reports as he needs and take quick flexible action to see that his branches are in line. The higher up the scale, the more complex the coordination factor becomes—reaching its apex in the home office itself. The home office must coordinate the work of the entire field on the one hand and coordinate its several line and staff departments on the other, so that they function smoothly and effectively with the field, both as directing and as facilitating units.

TABLE XVI.—COORDINATION

Q. What channels (as shown on your organization chart) do staff departments use to get their ideas to the field?

Answers	Channels
33	Direct dealing with each branch
18	Direct dealing with the zone or territorial headquarters
13	Dealing only through the home office operating department or operations officer

The discussion here is related to that on lines of authority. There would be no logic in burdening the operating department or operating function with having to visé or approve all that is sent from the home office to the field in way of routine. The tabulation shows that staff departments are usually left free to deal with the field without interference by the operating unit. This dealing is assumed to be in the regular agreed scope of staff departments and does not imply that any department can fire away at the field at will and order the branches to do thus and so. This would breed chaos. Circumscribing the lines of coordination are the lines of authority through established channels. The tabulation shows that some concerns use strict military channels in the home office dealing with field, as, home office dealing only with division or district headquarters and not direct with branch. This is not common; for the most part, the home office deals direct with branches

TABLE XVII

Q. Which home office executive makes the final decision when there is a radical difference of opinion between a staff department head and a branch?

Key Number	Home Office Executive
1	.....
2	President
3	General sales manager
4	Vice President or president
5	President, Vice President in charge of sales, Treasurer
6	Vice President, general manager
7	General sales manager
8	.....
9	Vice President in charge of sales or comptroller
10	Vice President in charge of sales
11	President, Vice President, treasurer, secretary
12	General sales manager
13	Division manager
14	General manager
15	Sales manager or general manager
16	Department head
17	Vice President in charge of operating
18	Sales manager
19	President
20	Vice President
21	Director of sales
22	.....
23	Has not been necessary. If so, by Vice President in executive office
24	Comptroller on accounting
25	General manager of sales
26	.....
27	Vice President
28	.....
29	.....
30	.....
31	Sales manager
32	Next man in line up
33	General sales manager
34	Vice President in charge of sales
35	Executive in charge of the major department of the business affected
36	Vice President or officer in charge
37	.....
38	Sales director
39	.....
40	Vice president in charge of stores
41	General sales manager
42	Vice president of sales
43	Vice president of sales
44	Vice president of sales
45	.....
46	Vice president
47	Vice president of sales
48	If deadlocked, executive committee
49	Vice president

A comparison of the company or key numbers of this table with the company numbers of Table I and Table II will show by type of business the home office chief to which the field units are responsible.

on some things and with district offices on others. What is the line of demarcation? I would suggest that the home office operating unit as well as other departments, deal with the individual branch so far as possible on routine and resort to division headquarters when there is a management job—major correction, promotion or intense instruction. Within the home office itself, ought not this same principle to apply—staff and functional units dealing direct with branch or district branch until the staff cannot get results? Then the staff should lay its case before the operating unit which wields the big stick. Would not any other course confuse the field? Can branches operate successfully with more than one master?

Of course in ideal institutions, chartered and recruited in Utopia, sharp differences of opinion and conflict in administration do not arise. But that time is not yet. Since there are occasions when such things must be ruled on and settled, who does it?

This question should have been clarified in the questionnaire, but my interpretation is that the home office executive in general charge of field organization is usually the final arbiter. For instance, a branch manager disagrees with the home office auditing department which figures his standard costs. He and the chief of auditing department can't get together. The manager refers his case to the district manager, who, if he agrees with the branch, sends it on to the vice president in charge of operating—or in the case of a sales organization, to the vice president in charge of sales. The latter takes it up with the head of the accounting department or with the officer who is chief of accounting head and agreement or decision reached; negative to manager, for example. This is relayed to division manager by the operating department and he in turn informs the manager. If it be a point of some consequence, the division manager writes the manager and also lays plans to personally review with the manager at first opportunity. In this instance, branch and home office staff were dealing direct until they locked horns—if branches and staff have horns. The appeal went up through channels. Staff head may have taken initiative and appealed to operating before district manager did. Operating handling should be the same in either case. The situation became one of correcting both division manager and his branch. This is why it had to be thrown out of routine into special line channels. It would not be sound nor safe to permit the involved home office staff department to hand out the correction. That's the posted ground of the operating unit.

So far under this discussion of coordination we have been talking mostly of management relationships. This is simply one vital element in good operating. There are other things—tangible things that come into the picture also. Among these we find the necessity to coordinate purchasing with production, advertising with selling, seasonal expansion with employment pressure periods and in fact all of these factors with each other. The assimilation of changes or new lines require general coordination, involving one or all of these factors and often many more.

The Instruments of Coordination Control. Before leaving this subject, we briefly touch upon the general instruments of coordination control such as:

1. Well-defined and charted lines of authority and responsibility both for the field and for the home office.

2. Committees at home office.
3. Personal contact, home office and field.

The visiting of branches by the home office men is most necessary in the larger points where the rapidity of movement and volume may cause the manager to drift rapidly from practices and policies.

Another plan is to have a home office man in a branch under the functional control of a chief in the home office, but under the direct disciplinary control of a branch manager. The basis for this arrangement to be successful is mutual service to each other. The insurance companies have worked this out very well by having a home office man, usually termed cashier, in the office of the general agency. This type of relationship may be more successful than the plan of having a home office man visit a branch just twice a year to give it the once over. However, such a "cashier plan" may cause friction unless authorities and functions are very clearly set forth.

4. Budgets { Finance, sales.
Time.
Work.

This paper does not present the opportunity to elaborate these items of control technique. It simply points out that budgets should not be restricted to the all too common thought of finance. It is essential in good management to budget other things as well as dollars and sales. Time is a factor that needs to be budgeted. Good coordination absolutely requires that time be given a budget basis. There is a time for work to be done. It must fit in certain schedules to be assured that there is a profit. Throughout budgeting also runs the thought of comparison. Comparison has to be used in framing budgets and in guiding our action by them.

5. Planning.

Planning likewise is too well recognized a factor of management to need elaboration here. Without planning of all phases of the business, there is bound to be some helter skelter operation, some expensive moves. Planning applies to personnel, to product, to sales, to advertising, to all things that concern the management.

One of the keys to coordination is cooperation. A good illustration is that of nationally known manufacturers of automobiles, with thousands of dealers. These dealers are independent agencies. They can close their shops, go out of business, change lines, but here is a vast enterprise dependent upon them. All these dealers take a form of supervision imposed by the manufacturer, use a common accounting system, same rates for service charges and joint advertising. Often you see one ad signed by three or more competing agencies. Why does this thing work? It is coordination through cooperation. Cooperation provides mutual service. To carry the case further, the factory establishes its own supervisory headquarters in each state. This unit gets monthly confidential compilation of sales, costs and profits from each agency, averages all returns for the state and relays the figures on averages to each dealer. Then every dealer can see whether he is above or below average. If his profits are below, he can call on state headquarters to

analyze his books in detail. This service is rendered gladly and points out where his leaks are. Where such conceptions of mutual service and cooperation exist coordination becomes easy. This same lesson can be applied to functions of line and staff, home office and zone headquarters, zone and district headquarters, district and branches. Cooperation and mutual service—that is the principle of coordination.

The Personnel Problem. Now what is the very life of a branch structure? It is the personnel. I had some misgivings about including the questions under the above heading, for fear of duplicating one or more phases of personnel management that have already been surveyed by others. But I could not logically complete a treatment of branch office management without giving a place to one of the most vital elements of such a subject.

TABLE XVIII.—SOURCE SELECTION OF MANAGERS

Answers	Sources
29	Salesmen
8	Assistant managers
	Field
	No special group
12	Miscellaneous
	Foremen
	Office and credits
	Clerks and auditors

a. From what source do managers come?

Generally speaking from the line, from the men on the firing line. Field men are selected for field jobs. Since most of the branches listed are sales branches or have sales units, we find more salesmen being selected than other types.

b. By whom are managers selected?

By the executive in the home office in general charge of branches. This statement should be modified both up and down. The general process seems to be for branch or division managers, who themselves are loyal and well sold on the company, to be charged with keeping on the alert for potential managers. The field, through established channels, recommends or nominates candidates to the chief officer for the field. He usually has some executive committee pass on the selection which he proposes. In only a few instances is the selection reported as left to a field man, but decision is reserved for home office; another case where cooperation is the key to this important job of selection.

Twenty-three concerns report having adopted managerial qualifications. The setting of such qualifications is a management device acting as a balance wheel. It helps to offset pull, pressure, over influence of personality. Qualifications contribute to analysis, wide open weighing of a prospect, rather than blind hunch or the impression of the moment. The questionnaire did not develop any relation between manager specifications and job analysis, but here is a relationship. The higher up the scale we go, the more difficult it is to analyze the job in specific terms and also the more difficult it is to pick managers.

TABLE XIX.—TRAINING MANAGERS

Answers	Place
19	In branch
3	In home office
19	Both in branch and home office

c. Who trains managers?

Branch and home office both take a hand in training. Lacking detail, it can be assumed that in this joint program the branch trains largely in practice on the job—training through doing—while home office gives theoretical as well as actual course of experience in factory and in office departments.

The training is given by branch or division managers—by an officer—or by several home office executives or through organized training departments in the home office. Replies varied so that no generalization is justified. The same is true of the duration of the training period which varies from three weeks to years. If an average could be figured, it would approximate two months at least, or even more. The most significant thing is that a very high proportion of companies trains in one form or another. But there must evidently be a fertile field for central management to develop or improve this training and to plan it expressly for branch office use. This is assumed because of the wide variations in duration of training and in the channels of training.

The foregoing discussion on training calls for a distinction between training and development. The former means learning and becoming proficient in technique; the latter means growth in wider and larger range than mere training provides. The questionnaire did not draw this distinction—but it is nevertheless a very important one and it behooves management to be concerned even more about development of managers and potential managers than about their training. Undoubtedly much development is given, whether definitely recognized or not.

Promotion of Managers. Promotion is universally reported as weighting merit first. Seniority is of little weight, though is often considered as secondary. In general, those who originally selected the manager come in on promotion, except that the branch manager who aided finding and selecting now fades from the picture, since obviously equals are in no position to help much in proposing promotion from their own ranks.

Compensation.

TABLE XX.—COMPENSATION OF BRANCH MANAGERS

Q. Do you have salary standardization in the field? 22—Yes. 22—No.	
Answers	Methods
43	By salary
17	By commission
23	By bonus

A combination of two of the above is found in nearly every case.

Salary is basic compensation for managers.

Bonus and a commission are important supplements; bonus in addition to salary being more common than salary and commission.

This brings us to a kindred table—incentives.

TABLE XXI.—FINANCIAL INCENTIVES

Q. Is there a common program of financial incentives for the higher management group in the field? 36—Yes. 10—No.

Answers	Methods
23	Bonus
13	Sale of company stock below market
3	Profit-sharing

Other forms of incentives are cash prizes, special campaigns, percentage of net earnings of company, group insurance, savings and investment plans, and pensions.

It is accepted as good business to provide financial incentives for branch managers. There is a high preponderance in their favor.

Morale.

TABLE XXII.—CHIEF MEASURES FOR CREATING MORALE

Answers	Measures
44	Promotion from within the ranks
35	House organs
28	Letters or messages from chiefs
27	Training program
22	Suggestion system
17	Published policies
8	Employee representation

Other Measures: Educational aid, special recognition for length of service; employee benefit plans, such as pensions, savings, easy plans for buying stock, sick benefits, social clubs and employee activities, group insurance, and a warm interest of the management in the employee group.

Undoubtedly a prime obligation of management leadership is creation and maintenance of morale. It is a responsibility of management so to organize that employees will have self expression and channels of releasing their constructive thinking. Management that is successful cannot be confined to profit taking and to technical specialization. Satisfactory industrial and personnel relationships are essential to good management.

Summarization. 1. Establishment of Branches. The principle reasons are "service to customer" and "accessibility of markets."

2. Field Supervision and Organization of Branches. The prevailing practice is to group several branches under a territorial unit for supervision and operating purposes. This is especially true where the number of branches is large and geographically extensive. It appears to be a logical and natural step in delegating supervision and direction as the branch office base broadens. It avoids the home office having to spread itself too thin over a large area.

3. Operating. Division and district managers—when reported—and even branch managers when directly supervised from the home office are given considerable latitude in carrying out their jobs. Management depends largely on these managers to carry out anything given them and relies principally upon reports and financial returns as the chief instruments of control. There is a fairly loose system of supervision through personal contact. Guides or standards are set and used in a large measure, but on the whole I

am impressed that the field organization structure created by the management is far ahead of management's technique in using that structure.

More and better planning for the reception of new ideas by the branches; more consistent facilitating service from the home office staff; a closer knowledge by the home office of branch attitude and performance, are suggested as fields for study by management.

4. Coordination. Can be vastly perfected by a wider budgeting of factors other than sales and costs. There is in many an organization a rich field for more frequent constructive personal contacts between the branch managers and the home office heads.

5. In the personnel field of management the suggestion is made that much opportunity exists to develop morale among the rank and file and to better knit the branch personnel structure to the general organization. Development as distinctive from technical training calls for more thought from management in order to keep its manager personnel progressing for heavier responsibilities.

The test of a good organization is the effectiveness with which it accomplishes its objectives. There is no ideal ready made plan that can be fitted to any and every business. It is a fact, however, that there are principles of organization which can be made to apply to the specific problems of any business.

Some organizations work well not because they are inherently sound in organizations or methods, but because of the genius of the management or the unusual personality of one or more key figures in the management group.

Would such organizations then really merit the classification of "good organizations"? Such a description should be qualified. They are good only so long as the present group is in the saddle. After that, what? Perhaps disintegration. It is evident, therefore, a corporate enterprise which expects to progress and live on and on from generation to generation must recognize that its organization and methods should be fundamentally sound. If they are it will continue to function effectively even with one or more of its key spirits gone.

The inference is clear. A sound organization gets results today and is so organized and planned that a corps of men are being developed who will be well able to get as good results or very likely, better results as time goes on.

SECTION V

PERSONNEL MANAGEMENT

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CHAPTER I

DEVELOPMENT AND ORGANIZATION OF PERSONNEL MANAGEMENT

THE PERSONNEL DEPARTMENT

By J. W. DIETZ, *Superintendent of Industrial Relations, Kearny Works,
Western Electric Company*

What Size and Kind of Business Needs a Personnel Department? A personnel department is a staff group set up to render a specialized service to a company's operating and administrative organizations on all the problems of the business which are grounded primarily in the personnel or human element in the organization.

Such a statement is quite inclusive and perhaps can be made clearer by thinking of business or industry as an interweaving of human elements and material elements (see Fig. 1) with the human element as the warp, while interlocking and interweaving with this element are the material elements—the woof of the fabric.

The warp of the fabric is the human element appearing and reappearing, the strength-giving element holding the entire fabric together and giving it life and character and continuity. In business we speak of this warp as the general forces, management, supervisors, technical experts, customers, suppliers, competitors, stockholders, the public. Andrew Carnegie said that the men were the most important element in his business because with properly selected men he could soon replace destroyed physical equipment necessary to rebuild his business, and J. P. Morgan pointed out that the whole financial structure was built upon character. Our entire experience confirms these viewpoints and so we are justified in making the human element the warp of the fabric.

The material element, the woof, can be defined as raw material, supplies, tools, machinery, buildings, products, territories; and in terms of money it includes wages, salaries, costs, prices, rents, taxes, profits, and dividends.

Expressed in another way we have the following summary of the fundamental elements in business and the functions and activities in relation to them:

A. Elements or fundamentals of business.

1. Human (relating to men). General forces, management forces, customers, suppliers, competitors, stockholders, the family, the public.

specialized and complex human relations problems may be taken care of adequately.

How to Set Up a Personnel Department. Just what specific services and advisory assistance the personnel man or personnel department may render to the administration and operating organizations is problematical; they will vary with the type of business or industrial organization, the nature and number of the personnel, the make-up of the administrative and executive officers, and the personality and ability of the personnel officers themselves. These services will range all the way from the selection of employees to giving personal advice and counsel.

Whether a personnel department should be centralized or decentralized in control and operation is a problem which will have to be settled in the light of all conditions in a particular company. The question naturally arises, To whom should the personnel man report in relation to control or administration problems? Where does he fit into the operating or line organization? Where do the personnel specialists, in relation to training, health, safety, employment, pensions, tie into the organization? Should the personnel man really do any work himself, or just act as guide, counsellor, and friend to everybody else in the organization?

An executive in a large organization once said to me, "I tell my personnel man, 'As soon as you have worked yourself out of a job, you will have rendered the organization ideal service.'" Questioning further, I found that he was trying to emphasize that he wanted his line organization to be headed up by personnel-minded men. In other words, every one responsible for operating activities must be a personnel man, and the problems relating to the human element must receive management attention. It is such a conception that occasioned the comment of Mr. Thayer, formerly chairman of the board of the American Telephone and Telegraph Company: "It is just as important to schedule the development of a general manager as it is to plan a building program." If emphasis is so placed, the solving of material and financial problems, which are controlled by the human element, will take care of themselves. A business executive, ready to place this emphasis on the personnel or human element, is a personnel man. He is a *personnel executive*, this personnel leader, whether he be called president, general manager, sales manager, foreman, or department head. If we look back and review the evolution of organizations now having the reputation of being leaders in sound management practice, we will find that, expressed or unexpressed, this conception of employee relations and this practice have been in effect.

The general manager of a small plant who strives to provide steady work, adequate remuneration, opportunities for advancement, wholesome working environment, and constructive supervision does not need a personnel counsellor to aid him in the establishment of policies or in the organizing, planning or coordination work.

As his business grows, however, and he divides the operating job into distinct functions, such as buying, making, or selling, the heads of these functions may need personnel assistants located at divisional or branch offices or factories. And an employment department, a medical department, a training department, a safety department, a benefit department may be

organized at such locations or at general headquarters to render service in relation to the common needs of all departments. The responsibilities of such personnel assistants as the heads of these departments will differ from those of the line or operating organizations, as these staff people are not responsible for final results; they are responsible only for the quality of their special service and cannot relieve the operating executives or supervisors of their management responsibility for getting results in relation to both the material and human elements of their departmental work.

Each personnel assistant should, therefore, report to the head of the particular organization whose responsibility covers the functional or geo-

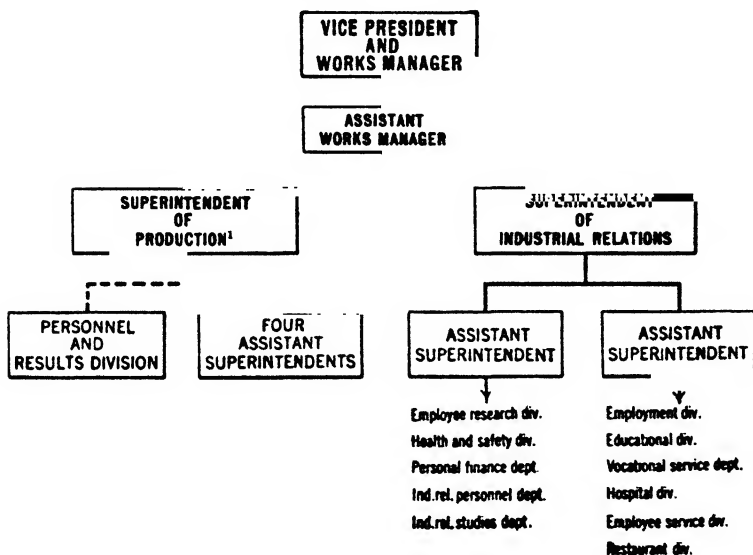


FIG. 2.

graphic area served by the personnel assistant and his organization. That is, if the personnel assistant serves a branch sales office, he should report to the operating head of that particular branch, while if the personnel assistant and his organization serve an entire plant or the entire sales territory he should report to the plant manager, or to the general sales manager. For example, in the Kearny Plant of the Manufacturing Department in the Western Electric Company the set-up is as in Fig. 2.

Each operating head is thus responsible for the entire personnel job within his organization. To have it otherwise would be to have divided responsibility in control and operation matters, which we all recognize as unsound

¹ There are four other superintendents reporting to the assistant works manager who have personnel division chiefs reporting directly to them.

business practice. Supervisors must be selected who have not only technical and executive qualifications but who have also leadership and character qualities which will make it possible for them to supervise their people in accordance with the best personnel relations practices. *No matter how equitable, human, and economically sound a company's employee relations policies may be they cannot be realized effectively if each supervisory employee personally does not comply with their spirit in the daily contact with employees.*

In the staff service, such titles as "employment manager" or "personnel manager" are misleading, because in the last analysis, the sales manager manages the personnel in the sales department, and the general superintendent, general foreman, division chief, department chief, or foreman are responsible for every day employee relations in their department. "Manager of employment department," the department which is rendering a hiring and placement service to the line organization, is a much less misleading title. "Manager of training department" is a suitable title within a store or organization which has a centralized staff training service and so, too, a "medical director" should head the medical department and a "safety director" or "safety engineer" should be the title of the individual who renders service in relation to safety work to the line organization.

Obviously, if many such specialists are needed, their work in turn must be coordinated. Such personnel specialists may report through the head of a staff personnel department who of course should report to the head of the organization which his department serves. And as the business grows, as more branches are established, as needs arise for more consistent practices and more careful interpretation of existing policies, a newer type of personnel man may appear—we might call him the "personnel administrator." His duty would be to assist those in control in policy formulation, program planning, coordination, analysis of results. He might be called vice president, assistant to president, general supervisor of employee relations or whatever title will rank him with those rendering similar service in relation to the material elements or the principle operating activities of the business. He should have this status in the organization, not by virtue of "heading up" the personnel function of the business, but because of the recognition of the relative importance of the service he renders to the controllers or administrators of the business. He in turn, if the volume of his work demands, may need to surround himself with a staff of specialists or experts or counsellors who render service through him to the administrative officers of the business or through the operating functional heads to the personnel assistants throughout all the line organization and at all branches and all locations. Such administrative assistants should be competent to promote attention to and advise on such fundamental matters as organization and administration (from personnel viewpoint) joint relationships, financial relationships, employment, vocational adjustment, training and education, health and sanitation, accident prevention, services for employees, and research.

Qualifications of a Personnel Executive. The personnel man is fundamentally a business man. He should be a solver of business problems. So-called personnel experts, narrowly trained in a specific phase of personnel service, thorough and professional as their training may be, will never be able

to render the assistance to operating executives in personnel matters which the business man, broadly trained and experienced in these specialties, will be able to render.

But it is asked, How do we get such personnel executives? Several companies are finding it advantageous to promote personnel men to operating and administrative jobs, and operating men to personnel jobs. Such a rotational program carried out over a period of years should provide each group with a thorough knowledge of all the fundamental problems of the business and provide the broad training of executives necessary for the successful operation and administration of the company business.

Relations of Personnel Men to Supervisors. If the personnel organization in an operating organization has been set up as suggested previously with the personnel specialists reporting to the heads of the line organizations they serve, then the personnel men are on an organization level comparable to the higher supervisors in the organization they serve. They are thus in a position to assist those supervisors in any way possible in the personnel aspects of their jobs but are not in a position to relieve them in any way of the total responsibility they have for the successful coordination and operation of the material and human elements in the entire job.

PERSONNEL RECORDS AND REPORTS, THEIR PURPOSES AND USES

BY ALLEN EVERETT, *Manager, Planning Department, Henry L. Doherty & Company*

The idea immediately suggested by the use of the phrase "personnel records and reports" is a voluminous file of material, never ceasing to pile up, involving no inconsiderable expense for its preparation, and of a somewhat questionable practical value.

What can justify the accumulation of a mass of material such as is being maintained by well organized companies today? It is true that very often the time that had to be taken from the regular work of the employees, for the preparation of some of the records now used, was given grudgingly. And after all why were these records essential when it was only necessary to hire a man and if he proved unsatisfactory, fire him; if he performed well, in the harness, increase his salary and if he continued to do a good job, promote him, and so on? Perhaps organizations did just that—with detrimental effects.

Organizations, and particularly the larger ones, found that this seemingly simple routine was mingled with snarls to which much thought and time had to be devoted for their unraveling.

So management made this work a specialty and centered it in personnel departments or industrial relations departments whose specific job it is:

1. To procure the force of workers.
2. To maintain and improve that force.
3. To carry on this work in complete cooperation with the various department staffs.

Personnel departments soon found that there was a labyrinth of problems which had to be solved and that many questions had to be answered. They also found that the solution of these problems depended upon the discovery of facts and that the facts might be obtained from useful records.

There are any number of personnel problems, which come up for decision, the solution of which could be improved by intelligent study of the facts derived from records. However it cannot be assumed that every personnel problem can be solved easily by the mere preparation of records. The human being is too complicated and too delicately constituted for exact analysis and so pertinent necessary facts are too often not revealed.

For purposes of this discussion the problems confronting the personnel department have been divided into three classifications. They are:

1. Problems involving the individual employee and affecting him personally such as his placement, promotion, salary increase, and his development.

2. General problems of policy affecting the organization as a whole or as a combination of units, as opposed to the individual persons who are to make up those units. This view is from the management standpoint and includes position specifications, salary standardization plans, production standards, and the discovery of unusual ability among the personnel.

3. The problems of imparting to other functions of the organization, information necessary to them in their work including maintenance of proper liaison with the pay roll department, introduction of the prospective employee to the proper department for interview and to the medical agency for examination, submission of expense budget reports to the general manager, etc.

The Application Record. Under the first classification comes the problem of selection of individuals to fill vacancies in the organization. These individuals are brought in for interview by advertising, through employment agencies, through introduction by employees and friends or through the casual visit of individuals seeking employment. Obviously it is of prime importance to secure new employees who will be best adapted to the work. How can the pertinent information be secured and how verified?

The record very generally known as the application blank has been designed to show information upon which decisions whether or not to employ may be based when verified, and supplemented by a personal interview. This information written in this form in the handwriting of the applicant, may be considered segregated into five parts:

1. **Personal information.**

- a. Name, address, date and place of birth, and nationality.
- b. Marital status, dependents, whom to notify in emergencies, and physical handicaps if any.
- c. Basis of introduction to company and memberships in military, social, religious organizations, etc.

2. **Education.**

- a. High school.
- b. College.
- c. Post graduate, with dates left, degrees, subjects specialized in, extracurricular activities, etc.

3. **Business experience.**

- a. Organization employed in at present and names of last few organizations in which employed, including for each, dates of employment.

positions held, salaries received, reasons for leaving, when present connection can be severed and whether or not present employer may be communicated with.

4. References.

a. Names of three or more persons, known in a personal way for several years, and their occupations and addresses.

b. If under twenty-one years of age give parent's occupation, etc.

5. General remarks.

a. Any additional information the applicant desires to offer.

With this information at hand and with the assistance of a personal interview from which to judge the applicant's personal characteristics, the personnel department and the department needing the individual should be able to make a selection. It is important then to verify the information given on the application where possible.

Information given concerning *education* may be easily verified by communicating with the high school, college or institution mentioned, by means of a simple form letter. The form letter would state that the individual was applying for a position and it would ask for the period of time he attended, courses completed, success attained in scholarship and one or two questions on personal characteristics. Replies should be carefully checked with the application record.

Information given concerning *business experiences* may be verified by communicating with the organization previously employing the applicant. A form letter may be used in this case also, and would inquire about the positions held, last salary paid, success attained and reasons for separation. Answers to the question whether or not the company would reemploy the individual should be a practical guide. Answers to these inquiries should be carefully checked with the application record.

Personal references may be checked from answers to inquiries made by form letter to individuals submitted by applicant as references. On the other hand it is so evident that individuals would only give for references, people who would return favorable replies, it is doubtful whether the cost to follow up these references is worth while. But the character of the names given as references very often serves a useful purpose.

When companies are engaged in a business, the nature of which demands bonding the employees, the acceptance of the *bond application* by the bonding company is a strong indication of the trustworthiness and integrity of the applicant. The bond application is made on a form provided by the bonding company and requests information useful to them in their investigation. If the bonding company refuses the bond application, the applicant cannot be employed by virtue of bonding company regulations.

Tests have been designed, and some of them fairly well standardised, to verify whether the applicant can qualify for the work which he claims his experience fits him for. It is not the purpose of this discussion to go into the relative merits of practical and psychological tests. It will suffice to say that various tests for different kinds of work and for personal characteristics have been designed and that relatively few have proved practical to a degree where they can be depended upon thoroughly. On the other hand practical tests in

typing, stenography, adding machine and other machine work, etc., have been found quite useful in that test results compare closely with results of subsequent performance on the job. In this way the ability of the applicant in certain fields of work may be checked before employment.

It is important to know something about the *health and physical condition* of the applicant with a view toward employing only those people who have the best prospects of maintaining satisfactory attendance records. Applicants are therefore given a medical examination by the medical department of the company or by outside agencies.

The results of the examination are tabulated on a medical form and a rating A, B, C, or D, etc., given by the doctor who examines the applicant, based on the content of the report. In this rating for example:

A might mean first-class condition.

B, not first class but satisfactory.

C, D, etc., mean that conditions exist which would make the applicant unfit for employment.

The deficiencies leading to adverse ratings appear in the body of the report. By proper medical care these may be corrected and subsequent examination result in A or B rating, with possibility of employment then. This course is generally recommended to the applicant. The medical examination and report covers eye, ear, nose, throat, heart and lungs, urinalysis, etc. Organizations which have resorted to medical examinations have found that they have been able to eliminate, before employment, a great number of individuals who would ordinarily have been placed at work and whose services would have been lost for considerable periods of time. In many cases the prospective employee did not realize that an extraordinary condition existed with the result that the examination was a benefit to both himself and the company applied to for employment.

All of these forms and reports should be maintained in the personnel department offices and should be available for reference.

The Progress Report. The next general problem is, by what means can the performance of an individual on the job be followed up and how recorded? In order to insure that general information about each individual will be obtained periodically, a report which might be called the progress report may be prepared by the person directly supervising the work of the individual and endorsed by the department head. This report generally includes a *rating scale*, space for certain other pertinent information desired and provision for *general remarks* which may be in order. Rating scales, it seems, are at the present stage of development more subjective than objective. This, and because of differences in the judgment of the raters prevents absolute or precise measurement. On the other hand, intelligent use of a rating scale will be helpful in recording the impressions made by the individual on the supervisory staff.

A convenient form of scale would consist of a list of the items to be checked and a horizontal line after each item. The rater is requested to place a check mark at a point along each line in accordance with the degree of success attained by the individual. It is understood that the extreme ends of

each line denote maximum degree of favorable or unfavorable qualities. The items rated include:

1. Personal impression.
2. Accuracy.
3. Quantity of work performed.
4. Cooperation.
5. Initiative.

In addition the rater is asked whether the individual is overqualified or underqualified for his work or if his interests are absorbed; also what recommendations are made if a change in position seems in order and general remarks. If this report is obtained at least once a year, the management and the individual are assured that each employee's status is considered periodically and not overlooked. The progress report should be supplemented by a personal interview with the individual, by a member of the personnel department, in order to get both sides of the story, and very often there is a story to tell. In this way misunderstandings can often be corrected and also a better gauge of the individual obtained. Results of the personal interview may be jotted on the progress report and filed with the application blank.

The information shown on the progress report will be useful in considering an individual for transfer or promotion, salary adjustment and special training.

In addition to the periodic check-up made at the instigation of the personnel department, the operating department staff will want to keep certain records to show the *history of the individual on the job*. Where the work can be broken down into practical units for measurement, production records can be kept. Comparison of actual results and standards will be an indication of success attained by the individual and be one basis for promotion, training, salary adjustment and removal. These records can best be compiled by the department employing the individual with periodic summaries for the personnel department to file with other service records.

The operating departments should also be interested in keeping *lateness and absence records*, summaries of which can be prepared for the personnel department to file with the service records of employees. Cost of time lost through unauthorized lateness and absence in large organizations is sometimes a large item and one which is susceptible to reduction. Organizations have found that unsatisfactory employee records are not general but are confined to a minority and are often remedied by discipline. Proper coordination with the medical department often results in avoiding extended absence due to illness and the policy of having all employees report to the medical department upon return from an absence supposedly due to illness has been found to reduce unauthorized absence.

The salary adjustment is a problem in which each employee is vitally interested and salary administration is one which is of major importance to the organization. Assuming that the company has standardized on a salary plan, it is important that each individual be given consideration at least once each year. For this purpose a form which might be called the "*salary adjustment review*" can be prepared by the personnel department and sent to the

department employing the individual for consideration. This form would show the name, position, department, salary range for that position together with the present salary and last three or four previous salaries and dates effective. Space is provided for recommendation for amount and date of adjustment. If it is the policy to consider each salary on service anniversary, then the form should indicate that recommendation for salary adjustment is to be given because of anniversary or because of a special reason such as promotion or exceptional performance. The recommendation is then made by the department and passed through regular channels for approval and pay-roll records. One of the major problems of the executive staff is that of training the new employee to do the work expected of him in his position and training present employees to fit themselves better for the work in hand or for more responsible work, or for supervisory positions. Whatever methods of training are adopted some kind of a follow-up for the results of this training should be inaugurated and these results should be written in the progress report and filed with the service record for future reference.

For the accumulation of the history of the individual while on the job, a record which might be known as the *service record* can be employed. For simplicity and availability this blank can very well be printed on the reverse side of the application blank. To it can be posted such information as:

1. Various positions held.
2. Reasons for changes.
3. Salaries received.
4. Educational courses while with company.
5. Tardiness and lateness summaries.
6. Results of tests.

The combined application blank and service record should provide a quantity of information about the status of the individual which will be useful subsequently for considering promotions, salary adjustments, etc. Particularly it will be invaluable as a source of information to the personnel department in locating material within the organization to fill vacancies in the higher up positions. This possibility permits of filling only the vacancies in junior positions with new employees, which has been found good practice.

General Policy Problems. Under the second classification come problems of general policy affecting the organization as a unit, and as a number of component units as opposed to the individual persons who are to fill up those units. Probably the first question presenting itself in this group is: What is the relation between all the jobs of the company and what are the lines of authority and control?

Undoubtedly a clearly defined organization plan showing the organization of each department, and the tie-in with the executive structure clear up to the president will provide the solution to this problem. Reading the plan of organization vertically will show lines of authority and control. Reading it horizontally will show the functional relations between units.

Organizations desire to know what the content of each position is and how much salary it should carry. Stated simply the solution to this problem depends upon a detailed *job analysis* of each position, the classification of all positions in various grades and the assignment of a salary range to each grade.

Organizations that have worked out standardized salary plans along these lines, have found out that it is a laborious and gigantic task but it is apparent that salary administration under a definite plan had great advantages. As a final result, each position has a range of salary. The minimum salary represents what a new employee on the job can be paid. The maximum salary of the range represents the greatest amount the company feels it can afford to pay for that work. Step rates for salary increase through the range, from minimum to maximum can be worked out to meet the average case and to be used as a guide in salary administration. Reclassifications can be made when necessary.

From the results of job analysis, *specifications for each position* can be worked out. These specifications describe briefly the content of each position and are useful to the personnel department as a guide in the employment of individuals to fill vacancies.

Another result of job analysis is the development of *standard practice instructions* which describe with enough necessary detail how to perform the work in each position. These are useful as one basis for the training of new personnel.

Another product of organization plans and position specifications is the setting up of the probable lines of promotion within an organization. A plan of this kind will show the stepping stones to higher positions. It is probable that in the average organization, the responsible members of the personnel department have from experience, a sound working knowledge of all the promotional opportunities so that intricate charts could be dispensed with. However the theory is that an ambitious employee armed with a promotion chart and a full set of position specifications can map out for himself an advancement plan and a course of study which, if successful, would seat him in the president's chair.

Most executives have at one time or another asked the question: What is a good full day's work? Most clerical jobs can be analyzed and their operations broken up into units which may be measured, making due allowance for weighting the various types of units. By adequate experimentation, *standards of production* can be set up against which the work of an individual can be compared. By this method production can be controlled and very definite records kept of performance of the individual. These detailed records should be compiled by the operating department but periodic summaries should be made for the personnel department for the individual service records.

Another problem that management is concerned with is the *turnover* of the personnel. It is appreciated that somewhere between extremes is an ideal turnover figure. If it is too high, the result is extraordinary costs for employment, training, etc. If it is too low, opportunities for the individual are limited. Monthly turnover records by departments and by units of departments will prove useful as a basis for research to find out the reasons for unhealthy turnover.

Results of studies may indicate improper working conditions, inefficient supervision, inadequate compensation in comparison with outside competition and a variety of other causes. The result of intelligent study of the reasons for separations will very often suggest the remedy.

In this same connection it has been found practical for the personnel department to maintain a record of the individuals who have passed through the various significant positions. Some employees will have attained a greater or lesser degree of success than others on the job. A careful study of the service records and personal characteristics of these individuals may give some insight as to the reasons for failure or success which will prove useful in filling future vacancies.

Another problem, in which management is much concerned is the *discovery of unusual cases* of all kinds among the personnel. Some examples of these problems are:

1. Which employees have unusual ability and can be trained for advanced work.
2. Which employees, not performing satisfactorily might be helped by training.
3. Which employees have failed to improve after special training and cannot be considered for promotion or salary adjustment.
4. Which of these employees, not adaptable or satisfactory should be removed.

The *personnel control chart* will assist in locating the more unusual or significant cases. This chart in its simplest form indicates the names, positions, and salaries of all employees, by departments and by units within the departments. It will indicate which employees are at the maximum salary for the position and reference to the service record will show which ones are qualified for promotion when the opportunity occurs and which are not. Other forms of control charts may be prepared in which unusual items of interest will become apparent immediately. For instance a chart showing length of service and salaries on coordinate paper will indicate subnormal, average, and abnormal progress over a period of years. Various other charts may be prepared with a definite purpose in view.

It is questionable whether an involved set of charts of this nature should be prepared as a matter of routine since a considerable amount of time can be consumed in their preparation which might not be commensurate with their value due to changing conditions. The simple form first described, showing the name, position, unit and salary of each individual, by departments should be prepared periodically—say every sixty days—and distributed to the various departments for verification purposes.

Clerical Routine. The third arbitrary classification covers the clerical routine for the liaison between the individual and the organization and indicates some of the forms and records facilitating that routine.

In large organizations where departments are not centrally located, it is convenient to use a small form for the introduction of the applicant to the department having the vacancy, for interview. This saves the time of members of the personnel department. The form, which might be known as the *applicant's introduction* is prepared by the interviewer and shows the name of applicant, position applied for and salary, department, location and name of individual in department for whom to inquire. Provision is made for a space in which the responsible department representative may authorize

acceptance or rejection of applicant. The form then becomes the media for preparation of formal placement tickets.

When an individual is employed, the personnel department must advise certain other departments of the details. For this purpose a four-part check size form which might be known as "*Authorization for Change in Personnel*" can be typed from the "Applicants' Introduction" which shows all details. The first copy is sent to the pay-roll department so that the new employee's name and salary may be placed on the rolls. The second copy forms the current organization file for the personnel department. The third copy is the confirmation for the department where the new employee is to work. The fourth copy is held by the personnel department and used as part of a tickler file for various purposes such as periodic interviews, progress reports, and salary adjustment reviews. The procedure may be followed in the case of promotions, transfers and removals. Convenient forms can be designed to cover miscellaneous items, such as:

1. Order for physical examinations.
2. Order for medical treatment.
3. Order for photograph for service record.
4. Schedule card for vacations indicating employees who must be replaced while on vacation.

It is also necessary for the personnel department to report periodically on volume of work performed by various members of the department for that period including number of:

1. Interviews.
2. Placements.
3. Transfers or promotions.
4. Removals.
5. Salary adjustments effected.
6. Progress reports handled.
7. Periodic personal interviews.
8. Reference letters handled, etc.

Each month, in companies operating under a budget plan, it is necessary for each department to check reports to date and to estimate revisions in expenses during subsequent months of the budget period. A careful survey of expected activities in the personnel department should reveal any differences from the original budget of salaries and other expenses.

*Design of Forms.*¹ No record should be prepared unless it is a well known fact that it will serve a worth-while purpose. As soon as its period of usefulness is over it should be destroyed. Forms and reports should be brief and contain only useful information and therefore, the paper size should be reduced to a minimum with a view toward standard paper sizes. Whether the blank form should be printed, multigraphed, dittoed, etc., depends on whether or not the form represents an internal record or whether it goes to the public and then, where there is a choice, which is the least costly method. The grade of paper should be as light as possible in view of the amount of

¹ For a detailed discussion of this subject see Chap. VII, office management section.

handling the finished product is expected to receive. Wherever volume is a factor consideration should be given to the use of continuous forms and a one-time carbon because a very appreciable savings in time results in the elimination of constant removal of forms from machine, carbon handling and insertion of new form.

PROCEDURE FOR MAKING AN INDUSTRIAL RELATIONS SUBJECT STUDY WITHIN A SINGLE COMPANY

BY GLENN A. BOWERS, *Director of Research, Industrial Relations Counselors, Inc.*

There is nothing mysterious about research technique. Although many crimes are committed in the name of "common sense," this and a bit of specialized knowledge should make it possible for even a person inexperienced in research to carry through a subject study in industrial relations within a single company. Of course, such a one must be able to see things clearly and in an unbiased manner. Experience in labor or personnel administration either in a supervisory or staff position is desirable, but by no means essential. In fact, too much knowledge about or experience with the subject under investigation might serve as a disqualification because of the difficulty which there might be in maintaining a detached position. It is the purpose of this paper to catalogue the steps to be taken in company industrial relations research so that anyone undertaking such a study may be aided in formulating his own procedure.

There are several types of research studies in labor problems. The one here considered relates to the investigation of a single subject in one company by a person in the firm's employ, the purpose being to use the findings in that company. The range of such subjects is wide, a few may be suggested: the rating of employees for promotion; compensation on the basis of employee contribution; paid vacations for wage earners; incentive salaries for supervisors, managers, and others of greater or lesser importance.

In contrast to this type, there is the general survey of industrial relations and the research into a single subject, either of which may be made throughout one company, a whole industry, or a community. While all kinds of research have many points of procedure in common, there are certain peculiarities which differentiate each one and necessarily affect the method of conducting a research study. Objectives may differ as much as may the scope of the investigation.

Strict standardization of research procedure is undesirable and usually impracticable. A free range must be left for the imagination and for the adaptation of the steps to local circumstances. In general, however, the following major processes or operations have to be carried through in making a subject study in and for a company.

Preparation.

1. Selection of subject.
2. Preliminary survey of practice or condition.
3. Determination of objectives.

4. Choice of investigator.
5. Limitation of scope of inquiry.
6. Formulation of procedure.
- Fact finding.
7. Assembly of data.
8. Classification and arrangement of data.
9. Analysis of data.
10. Draft of factual sections.
- Conclusions.
11. Determination of criteria.
12. Draft of conclusions.
- Presentation.
13. Form and arrangement of report.
14. Presentation of final report.

This breakdown of the task into its elements serves to clarify the entire process of research and to simplify the requirements of scientific method. In fact such treatment may be so elementary that it appears to be an attempt "to peep and botanize" over things which are perfectly obvious. However, the frequent failure of industrial researchers to do first things first and the tendency to rush headlong to conclusions make unnecessary any apologies for over-simplification, if such there be.

1. Selection of Subject. Ordinarily a problem to be solved or an outstanding opportunity for improvement determines what is studied by a company; but if a series of reports is planned it is necessary to decide the order of precedence. Such selection depends upon the arbitrary judgment of responsible persons as to the relative importance of each. The main point to be kept in mind in phrasing the title is that it should not anticipate the conclusions. For example, a proper title is *Experience with Attendance Bonus*, while an unsuitable title is *Why the Attendance Bonus Fails*.

2. Preliminary Survey. Before undertaking the investigation proper it is usually desirable to survey the existing literature on the subject and discuss the question with persons familiar with the field. In this way, shortcuts may be found or reports discovered which will make further investigation unnecessary at the time. Also other aspects of the problem may appear which outrank in importance or precedence the subject at first proposed. Thus when a certain company tackled the question of pensions for retired employees, it soon developed that a pension is only one of several items involved in the financial "independence" of the aged worker. The whole field of employee-employer financial relationships was then mapped out for coordinated study to include such things as group insurance, financial investments, savings plans, home ownership, mutual benefit association, and the relation of these to wages and earnings. Furthermore, the brief survey of the pension problem as encountered in other companies brought out the fact that there is as yet no generally accepted solution and that the study needed to be tuned in with the findings of similar investigations in other companies.

3. Determination of Objectives. Unless one knows what he is after there is little possibility of finding it. The objectives of a study are primarily determined by the same influences which caused the selection of the subject. The goal may be merely a quest for better understanding of an

existing condition and its effect upon the workers and the product, such as an analysis of the five-day week compared with the five and one-half-day week. Or the aim may be to devise a new basis for compensation of supervisors and managers, the old flat salary basis having shown itself an inadequate measure of the individual's value to the company. In general the objectives of subject research within a company fall in one or the other of these two types, more frequently in the latter: a mere search for more facts about a situation, or the development of a better basis of operation. It is axiomatic that the objective of a research shall not be the support of an existing belief, policy, or practice, although that may be one of the results.

4. Choice of Investigator. The largest single factor in the character of a study and the resulting report is the person who does the fact finding and prepares the original draft of the report. The selection of the investigator usually determines in advance the nature of the conclusions. A hard-boiled superintendent may turn out to be a "bull in a china shop" if assigned to analyze the field of employee publications, while a sensitive "welfare" worker might be "innocence abroad" in a study of contractual relations between employer and employee. The experience of the investigator ought to be such as would aid him in discovering the widest range of facts and perceiving them in their true light. Needless to say he should have imagination and a capacity to detach himself and his views from the case in hand.

The investigator may be chosen when the subject is selected in which case he will aid in the preceding steps.

5. Limitation of Scope of Inquiry. The scope of an inquiry may be limited first as to subject matter and second, as to sources of facts. In the latter case the study may be confined strictly to one department, to one plant, or to any other group, or it may extend over the entire company. Regardless of such limitations, certain pertinent information may be found outside the company, in addition to that obtained in the preliminary survey, such as public or confidential reports on the same subject in other industrial units. These outside data furnish a background for the internal situation and rarely can a local problem be analyzed adequately without some consideration for the experience of others with a similar problem.

6. Formulation of Procedure. Although the formulation of procedure naturally is one of the first steps taken, it must be preceded by the five processes discussed above. The plan of work covers not only the schedule of steps but as well the specific sources of data and the methods to be used in exploiting them fully. Where are the facts to be found? Who is best informed on the subject? Are there written records to be searched? Will a questionnaire need to be filled out or will the information be obtained through personal interview? How much time is allowed for the study? Will there be traveling during the fact finding? These and other questions of this character need to be answered in the course of outlining procedure.

7. Assembly of Data. Having completed the preparation, the actual assembly of data may proceed. This presupposes a detailed preliminary classification of the kind of data desired, although it may later be discovered that no tangible evidence exists on all of the points included in the outline. If the information is in statistical form care needs to be taken that the original

records are used or that available analyses based on them are technically sound. Such data must of course be comparable and capable of exact definition. For example, in the case of labor turnover, the formula for calculation of the rate of turnover may be unfit for use in a particular instance in that it paints an erroneous picture, whereas a study of stability of employment showing the length of service of employees might throw an entirely different light on the subject.

The data assembled should be inclusive or the selected sample tested to insure its representative character. A study of wage rates may have little significance in a seasonal operation as compared with a study of earnings.

Data are elusive if unrecorded, therefore, the necessity for copious notes—notes which are far more complete than will ever be used. Interviews particularly should be summarized if later to be used as a basis for judgment.

Fact gathering involves fact selection but the wise investigator will take every pertinent item he can get his hands on even though only a small portion may eventually be incorporated in the report.

In the process of fact finding, certain questions need to be asked which test the hypotheses formed for the particular study. Are the data being gathered reliable and accurate? Can they be verified? Are they relevant to the case being analyzed? Concepts must be formed on these points subject to correction or proof in the course of the investigation. Such an hypothesis in the case of a study of an employees' investment plan might be: Labor turnover is lower among employee investors than among those who do not own stock in their employing company.

This may or may not be a correct assumption, but it is capable of factual analysis in the course of the research.

8. Classification of Data. Frequently it is difficult to classify data accurately during the gathering of it. Information on certain phases may be found in several places and at different times. Filing, corresponding roughly to the preliminary classification, may be resorted to pending later sifting and arrangement in preparing the factual sections of the report.

9. Analysis of Data. The classification and arrangement of data are mainly mechanical processes. Although good judgment is required, these operations are frequently clerical in nature. On the other hand, an analysis of the facts demands an insight which will bring out their true significance and interpret them fully. This process should not be confused with that of drawing conclusions. It is rather a part of the description and identification of the situation as it is found to exist. A careful consideration of data which at first glance appeared pertinent may result in discarding it. Thus the average length of service of all employees may be an interesting fact and yet be thrown out because it varies so much between groups that the figure for the entire company not only fails to have significance but may actually be misleading.

10. Draft of Factual Sections. A final process in the development of facts is the textual presentation of them; a stage at which misinterpretation may creep in. Even with the exercise of great care and without intention, the investigator may misrepresent what someone has told him or he may have failed to observe all of the significant features in the data. Hence the practical necessity of checking back with his informants as to the content, form,

and phraseology of the descriptive sections prepared by him. In case a proposed correction involves merely the manner of statement without distorting the facts, it is usually good policy to accept it. If there appears an effort by an interested party to alter what the investigator feels is the correct picture, the latter must rely upon his own judgment or include the proposed change with his own comments thereon. Rarely should it be necessary thus to present conflicting descriptions of fact. This process of verification of the situation as presented and described is a stamp of approval in the form of an agreed statement of facts on which future consideration of conclusions may be based.

The completion of the descriptive section, however brief or extended, before undertaking to formulate conclusions has the important virtue of separating facts from opinion. If carefully pursued, it removes from the fact sections all indication of conclusions which inevitably take shape in the mind of the investigator in the course of his research. This separation of fact from opinion has the added advantage of clarity for those who later read the finished report.

11. Determination of Criteria. In everyday affairs decisions must be made promptly and without much ado. Some folks have developed an unwritten code or set of principles which serves as a measuring stick for any set of facts presented to them. Unfortunately, however, not every person is so constituted that his standards, hastily recalled to mind, furnish a reliable basis for judgment. Here we are talking about research which inherently requires time and deliberation. The setting up of criteria for the appraisal of facts obtained through research is one of the requisites of the "scientific method." Thus even in a relatively narrow inquiry, it is well to give specific thought to the basis for judgment as well as to the facts brought out in the study. Needless to say, the quality of the conclusions drawn depends upon the reliability of the criteria used.

What are the aims in the practice being analyzed or the plan being devised? Are these aims economically and socially justifiable? What quantitative or statistical records exist to indicate the accomplishment which might be expected under favorable circumstances? What has been the experience, including historical developments? What has been the experience, including historical developments, with subjects closely allied with or similar in character to the one being investigated? What is the prevailing judgment of experienced persons as regards principles underlying the subject at hand? Answers to these questions however unsupported by positive knowledge will ordinarily provide a yardstick for appraising the set of facts in hand. Such questions pertain to basic assumptions which constitute the background for the study. Opinions may differ as to any set of standards which are selected. Without pleading for their soundness the following are illustrative of general criteria for appraising a plan for an employee's investment in stock of his own company:

Thrift should be encouraged, for a thrifty employee is more desirable than one who does not save.

Financial stability in wage earners' investment is more important than possible high rewards with speculative risk.

An employee who has money invested in his employing company tends to give more conscientious effort than one who has not such a stake.

Some of these criteria are capable of proof or disproof but regardless of their validity they represent the kind of a measuring stick which often has to be used to test out the provisions of a proposed plan.

This emphasis on setting up of criteria may seem to be overdrawn, but it is a process which everyone uses when he formulates conclusions. A danger lies in the failure to isolate and recognize the criteria in each specific case. The setting up of indisputable criteria can scarcely ever be accomplished. In fact, almost any criterion may be made the subject of a separate investigation.

12. Draft of Conclusions. In drawing conclusions in the illustration just used, certain questions in connecting the facts of the case with the standards naturally arise: Does the plan encourage thrift? Does it give security of investment? Are the terms such as are likely to be accepted by employees? If the original assumptions or criteria are sound and if these and other questions are answered affirmatively then the conclusion naturally is that the proposed plan should be adopted.

In formulating conclusions the widest possible use should be made by the investigator of other persons' judgment based on the facts on hand. Pride in authorship and proprietorship of ideas may have a place in some research fields, but when displayed in the type of studies here discussed, it usually represents a short-sighted viewpoint. Through clearance of conclusions in draft form with persons authorizing the report whenever possible prior to the final report, opportunity is offered for improvement in statement without necessarily changing the intended meaning. In case of conflict of judgment the differences of opinion ought to be set forth in the report.

13. Form and Arrangement of Report. The general appearance of a report, including the orderly arrangement of contents often has considerable influence on the reception it gets. A piece of work involving several hundred dollars or more in salary and other costs deserves a decent cover and typography. For the convenience of the busy executive, a summary of findings at the front of the report may make unnecessary the careful reading of all supporting evidence. Nothing will win approval for the researcher more readily than the placement of the proverbial "crystal ball" where it can be easily found.

14. Presentation of Final Report. Finally the completed report is presented by the investigator to the one who assigned the task, preferably in person.

Experienced executives may ask, Why all this fuss about unimportant details? In the first place, business people are relying more and more on facts and less upon hair-trigger decisions. Furthermore, there are certain basic principles of research which are likely to be overlooked unless care is taken. The following are a few of the fundamental requirements in sound research method:

1. Plan carefully but not rigidly.
2. Get all accessible facts.

3. Take copious notes.
4. Classify data.
5. Strive not to fix opinions while assembling data.
6. In writing, keep facts separated from opinions.
7. Formulate conclusions only after fact finding is completed.
8. Present report accompanied by brief summary in form for easy digest by its readers.
9. Throughout maintain an impersonal, unbiased and broad-minded attitude.

As we look back over this apparently devious path obstructed occasionally by high-sounding words such as hypotheses and criteria, it is observed that every step is a simple one. When once the habit of straight thinking has been acquired, as when a child learns how to walk, there isn't much mystery left in the process. Without this habit of using good common "horse sense" the industrial researcher is likely "to waddle" along in his thinking awkwardly as one who has never learned the art of walking.

TRENDS IN PERSONNEL ADMINISTRATION¹

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There are so many different industrial sections of the United States of America, each of them influenced more or less by the dominance of different types of industry and affected by different stages of industrial development, that any attempt dogmatically to indicate the personnel trends in America is likely to be subject to so many lines of dispute as to make the effort almost reckless.

This paper will, therefore, attempt simply to survey the most outstanding new developments and to indicate trends which are likely to become most marked in the next few years.

Organization of Personnel Administration. The time was when personnel work was largely regarded as the job of the personnel man and there were many persons who argued that the personnel department should have entire control of personnel administration. This was true particularly of the period from approximately 1914 to 1920, when personnel administration was being rapidly developed and when personnel men were struggling for a degree of recognition, influence, and even authority which previously they had not had. The natural result was that with notable exceptions there was an overemphasis of the authority of the personnel man and an underemphasis of the personnel functions of the line organization from foreman to president. This resulted in many conflicts of jurisdiction and authority which were very disturbing to the effective execution of a personnel program.

Since the great depression in 1920 and 1921, including among many other things some deflation of the personnel movement, a rather different point of view has grown up.

¹ Reprinted by permission from *Harvard Business Review*, January, 1929.

In the first place, it has become a generally accepted principle that personnel administration is a function of every person who supervises others in the organization. One hears speakers and finds writers discussing the qualities of foremen in terms of whether or not the foreman is a good personnel man, and there are even references to presidents and general managers as good personnel men. There are not a few presidents of companies who openly make the statement that they are the chief personnel directors of their companies.

As a result, personnel men, instead of claiming that they have absolute power in selection, placement, and dismissal of workers, regardless of any preference or conviction on the part of the foreman, are now claiming that it is the function of the personnel department to facilitate the work of the supervisor in dealing with the personnel problems involved in management. "Facilitation," the admirably expressive term used by Oliver Sheldon in his excellent book, "The Philosophy of Management," is a term which is beginning to make its influence felt in the United States and a term which gradually is being used more and more generally. The personnel department is thus being recognized as a facilitating department, its functions being to assist the organization in the preparation and execution of personnel policy through research, advice, and cooperation.

Organization for Selection. An employment manager, for instance, does the initial job of weeding out the applicants for employment, selecting those who would have a fair chance of fitting well into the organization, and referring them to the supervisor who is in need of additional help. In making this selection, the employment manager, of course, weeds out persons whom the supervisor might be disposed to employ but who would not fit well into the organization. It is still true, and probably will continue to be true in the majority of companies, that no supervisor will be permitted to employ men who have not had the approval of the employment department. But the power of employment managers to prevent a foreman from dismissing an employee from his department has practically disappeared. Every foreman has, or should have, the power to dismiss from his department, referring the employee to the employment department either for a final separation from the company or for transfer to some other department. On the other hand, most personnel departments have the responsibility of transferring men from one department to another within the company even against the wishes of department heads who may wish to keep men in their respective departments. In common practice department heads have learned the value of cooperation in this matter, and transfers are made without friction.

In the light of this newer point of view, responsibility for results is clearly indicated and there is no confusion as to authority in regard to the administration of any department of a company. In cases where supervisors have an unusual turnover or seem unwilling to cooperate with the employment department, either by releasing men for transfer or by accepting a reasonable proportion of men selected by the employment department for employment, the solution of such difficulties lies in the possibility of the employment department's recommending to executives, higher up than the offending supervisor, the possibility of the removal of the foreman or the correction of the abuses for which he has been responsible.

Training of Supervisors. In the development of the principle that personnel administration is an integral part of management, there have been several other evidences of progress. For instance, it is customary for supervisors to participate in the preparation of such documents as a manual of employment procedure or a syllabus of instructional outlines for the training of employees. Members of the line organization, including the foreman, are much more likely to cooperate in carrying out the personnel program when they have had a part in the preparation of the policy and program and of the tools which are to be used in making them effective.

One very logical corollary of the newer point of view is an effort to train the supervisor in the process of carrying out the company's personnel program. In some companies this has been done informally for years and is simply instinctive good management. Indeed, there often is no thought-out philosophy with regard to such an interpretation of policy. It is merely an expression of the good sense or natural inclination of the leaders of the business. But in very large organizations, even though the upper executives have this spirit and vision, it becomes extremely diluted before reaching the lowest ranks of supervisors. Therefore, it is highly desirable that some more or less formal steps should be taken to convey this policy effectively down throughout the organization.

In the last two or three years a few companies have begun to train the supervisor in the carrying out of the company's personnel program. Without such steps, the personnel work of a large organization is likely to fall down at its weakest point, and all the energetic, intelligent and well-informed efforts of the director of personnel will scarcely get past first base unless steps are taken to strengthen all the positions on the team by which the personnel program of the company must be carried out.

Organization for Training Employees. This need for training all along the line finds expression most clearly in a company's program for the training of employees. The training of rank-and-file employees has been conspicuous in American industry for nearly thirty years. At first the emphasis was primarily on what might be called education as distinguished from training. In a good many cases such an educational movement was initiated by an executive officer of the company who himself had had comparatively few educational advantages and who was inspired to give to his employees advantages which he had not enjoyed himself. The motive was essentially philanthropic rather than economic, and the driving power was emotional rather than intellectual. A contributing factor was the need for training in English and citizenship for the large number of non-English-speaking immigrant workers. A good deal of the instructional material had little bearing on training for the job and might be regarded as a substitute for the work of the public schools.

During the war and its attendant industrial boom, industry was forced to lay emphasis on training for the immediate job, the consequence being a rapid growth of vestibule schools which provided quick instruction in the elements of performing the job. Consequently, there was a shift from an emphasis on what may be fairly called industrial education to job training.

Meanwhile, industrial training began to feel the influence of different pedagogical ideas. Whereas the earlier instruction offered by companies was con-

ducted by what was called "corporation schools" with formal class rooms, instructors, etc., the newer tendency was for training the worker in actual production under an instructor foreman, and this change in method brought such quick and effective results that it was a very large factor in making possible the increase in wage levels which took place during the long boom period from 1914 to 1920.

The Project Method of Teaching. Into American business has come of recent years a group of advanced pedagogical thinkers from the university schools of education. They have brought with them the project method of teaching, involving what we now commonly call training on the job, and the preliminary steps that were taken during the war have in some quarters been carried much further to the extent that the supervisor, regarded as the real teacher of the worker, is being trained in the process of teaching so that he may perform his functions better than ever before, better than the training function was performed by corporation schools and better than it was performed by the foreman or the journeyman before the era of corporation schools began.

The president of one of our most progressive companies has frankly said that management is in large measure an education and training job. He illustrates this by telling how on one occasion a number of executives of his company analyzed management in terms of specific operations and that after classifying all the typical operations, nine out of ten of them were listed under education and training. The reasonable inference from this analysis is that a great proportion of the training falls upon the shoulders of the supervisor and, in order to get that training done effectively, he himself must be taught to train. This naturally raises the question as to *what is the function of an educational or training department*. The answer may be given under four main headings.

1. To provide that enthusiasm and promotive quality which spreads interest in training throughout the organization and creates desire and willingness on the part of every supervisor to take part in the training process.

2. To help to prepare the instructional outlines to be used by supervisors in the training of their workers. One says help advisedly because it may easily be recognized that when the supervisors themselves have prepared the instructional outlines with the help of an educational department, they are much more likely to take an interest in the training program and to feel a definite responsibility for making it actually effective.

¹ One of the largest electric manufacturing companies has practically done away with all formal classroom instruction of employees and is concentrating its efforts on training the foremen to train others. A syllabus for supervisors in an electrical public-utility company consists almost wholly of material which deals with teacher training for foremen. The assumption is that in order to make the training program really effective, steps must be taken to have the training of the worker continuous from the time of entering the plant until he leaves it, and the principle is followed that the best training is that which is given in connection with actual work under normal circumstances of supervision, incentive, and responsibility.

3. To prepare, improve, and constantly revise the procedure for carrying out the training program, thus facilitating the work of the supervisor.

4. To take a very active part in training the supervisor to train.

On this point it might be argued that the higher executives ought to have the responsibility of training the supervisor to train, and doubtless as time goes on they will participate more generally in this phase of the training program. There are instances where a general manager has actually taken this position, and, having done so, has expected his associates next in line to take the same attitude with those further down in the organization.

Research in Personnel Field. Reference has been made to the advisory relationship of a personnel department to the line organization. It will be recognized, of course, that the effects of sound advice must be based not only on the personality and promotive qualities of the director of personnel activities, but also on scientific research in the field of personnel management. Incident to this changing conception by reason of which the personnel job has been placed squarely on the shoulders of the supervisor, the personnel department has been relieved to a considerable extent of what may be called operating personnel responsibilities, and is thus left time for more intensive research into the personnel problems of the company. Consequently, personnel departments are less disturbed than formerly by interruptions and are better able to concentrate on more fundamental investigations of personnel problems. These have taken many directions, such as research on hours of work, bonus plans, pensions, profit-sharing systems, group insurance, suggestion systems, employee investments in company securities, savings plans, mutual-benefit plans, discovery of methods of labor stabilization, and have even led to the developing of wholly new lines of products intended to fill in seasonal gaps in employment.

Sales and Office Personnel Problems. The end of the war marked the beginning of more severe competition due in part to excessive plant capacity. But the competitive struggle became intensified through increasing competition between lines of industry producing substitute commodities; the radio has begun to take the place of the talking machine, cement is making inroads in the construction industry, giving brick and steel construction a new line of competition more severe than they ever experienced from within their own industry. Improved transportation facilities bring sources of supply in competition with each other which formerly were serving non-competing territories.

The result has been a severe demand upon the manufacturing end of business to bring costs of production down to even lower levels. The factory executives have begun to protest and to urge that similar economies and reductions of unit costs be made in the marketing and administration expenses. As a consequence, personnel problems, which at one time seemed to be confined largely to the manufacturing side of business concerns, now are beginning to be recognized more and more clearly in the distributing and administrative departments. Office-personnel departments and sales-personnel departments have been established in many American companies during the last few years. Banks and insurance companies are giving attention to office personnel problems in much the same manner that was formerly given to manual workers by manufacturing companies. The careful selection and

training of salesmen has become recognized as important as the training and selection of labor.

Organization of Personnel Departments. Another result has been that not infrequently a company may have several personnel departments existing side by side. An office manager who is also a manager of the office-personnel department, a factory-personnel department, and a sales-personnel department may be found in the same concern. In a company with several plants there are usually managers of personnel departments at each of the factories, with a central personnel department which has no authority over the personnel men in the various factories or other units, but which cooperates by providing information and advice for the personnel men in the various units as well as for the major executives of those units. There are instances of marketing organizations which have managers of personnel departments in their branch offices.

Some years ago it was not unusual for companies to have several men each in charge of a phase of the personnel work. A company might possess an employment manager, a manager of the educational department, a secretary of the pension committee, a secretary of the mutual-benefit association, a safety engineer, etc. In recent years there has been a tendency to coordinate these activities into one personnel department in charge of a chief assisted by specialists in the various problems of personnel.

One typical personnel department is headed by a supervisor of industrial relations who has as his associates a safety engineer, a manager of the employment department for headquarters, a personnel statistician, an educational director, a manager of the company store, and a medical director. Most of these have an advisory relation to the executives of branch offices and branch factories as well as to personnel men in those respective units.

The position of the personnel man in the general organization differs in various firms as is often indicated by his title. There are a number of instances of personnel men who are staff vice presidents of their companies. "Employment manager" was a title very generally found a few years ago, but at present it has been superseded in many concerns by titles containing the word "personnel." For a time the title "personnel manager" was spreading rapidly, but recently such titles as "director of personnel activities" and "supervisor of industrial relations" have become more common. The fact that the title personnel manager is gradually disappearing reflects the point of view that the personnel man does not manage or direct the personnel, but rather manages or directs the work of the personnel department. The management of the personnel has become increasingly the province of the line supervisor. There is, however, very little uniformity in titles: "Manager of personnel activities," "service manager," "manager of training activities," and many others are found at present in common use.

Certain definite trends may be recognized in the various phases of the activities of personnel management.

Wages and Salaries. There has been a very marked tendency toward the growth of extra incentives in the compensation of employees. There are, as is well known, a great variety of formulae for setting up a compensation plan, about twenty-five of them being known by the names of the men who

invented them. There are, in addition, a great many others which are adaptations of these.

One of the most significant developments is a comparatively rapid growth of group bonus plans for manual workers, intended to give additional compensation to the group on the basis of the output of the group. Sometimes these groups consist of men engaged in work of the same kind but in which several men must cooperate. In other cases, the group consists of men who carry on a series of operations through their several steps. In some cases the foreman is included in the group or at least receives extra compensation based on the output of the group.

One of the distinct advantages of the group bonus plan is that it puts a premium on cooperation, encourages workers to insist upon their fellow workers doing a fair share of the work, and being on the job promptly each day. In some cases, it encourages the worker to help train his fellow worker.

In dealing with the sales force extra incentives through commission plans or bonus plans are becoming very general. Until recently, however, there have been comparatively few instances of compensating office employees on the basis of a measured output. This has been due, in large measure, to the difficulty in measuring the output of various classes of office employees. In the last few years, however, some very substantial work has been done in developing methods of measuring office-employee output. The number of companies which are applying these methods is rapidly increasing, and new techniques have been evolved for measuring certain classes of office work which previously had defied measurement.

This development is making it possible to compensate office employees on the basis of their output, and the next few years will probably see a very substantial development in this direction.

An intermediate stage in the compensation of office workers has been the development of what is usually referred to as job classification and salary standardization, in which jobs are rated and classified and minimum and maximum limits set for classes of jobs.

Profit Sharing. In general, it may be said that the growth of profit sharing as applied to rank-and-file workers has practically been abandoned in America. The conviction has grown that, while profit sharing may be an excellent arrangement as applied to persons of some responsibility, it has comparatively little effect on the rank and file, and is always in danger of creating ill will when a period of low profits or of no profits arrives.

Incentives, which are based on the actual output of the individual and an extra compensation paid very shortly after the production period has been completed, have in large measure taken the place of profit sharing as applied to rank-and-file employees.

Compensation of Executives. In the days when ownership and management were almost inseparable, the compensation of the manager was equivalent to the profits of the business, but with the practical divorce of management from ownership which came with large-scale industry and the development of the corporation, the first tendency was to put the manager on a salary, his dividends from stocks comprising a comparatively small part of his total income. There were, of course, many private "deals" in which the

manager was paid a salary and received as additional compensation either a bonus based on profits for the year or the dividends on stocks which were assigned to him and which by good management he might make extremely valuable. These cases applied, however, chiefly to the president or general manager of a company.

In recent years there has been a distinct tendency toward applying the principle of extra incentive to other executives—factory managers, district sales managers, the foreman and other supervisors, and even to staff men—the result of whose efforts it is usually comparatively hard to measure.

Some of these plans take the form of the more or less old-fashioned profit-sharing plan. In general the tendency, however, has been to base the extra compensation, so far as possible, on a measurement of the results of the efforts of the particular individual. The net result of this departure is to reintroduce into large-scale business in America some of the elements of incentive which were general when business was small and when the manager was also usually owner and thus had a direct interest in the business.

Hours of Work. The work time per day and per week has been decreasing in America over a long period of years. One of the greatest issues of public importance was the steel industry's twelve-hour day, which three years ago became a thing of the past. The elimination of the twelve-hour day in the steel industry does not seem to have in any way justified the alarming predictions which some persons were disposed to make. In fact, there were many people in the steel industry who believed that it could have been done long before.

During the last few years the most significant occurrence was the adoption of the five-day week by the Ford Motor Company and the growth of a good deal of propaganda in favor of the general spread of the five-day week. There has been comparatively little evidence that the movement is spreading widely but there are those who predict that five or ten years from now the five-day week will be as general then as the five-and-a-half day week is today.

Vacations for Manual Workers. Vacations with pay for executives and office workers have long been general, only a comparatively small number of companies holding out against vacations with pay for office workers.

More recently vacations for manual workers have become more general. In some quarters the opinion is held that this vacation with pay increases the loyalty and efficiency of the worker and that it pays profits to the company even though it does somewhat upset the production schedule. A great deal depends upon the character of the industry and the custom of the community.

It may fairly be said that, while there is no well-thought-out attitude on the practice of vacations with pay and that the practice is more or less a matter of expediency, nevertheless it is probably gradually becoming an unwritten part of the contract of employment.

No American state has made vacations with pay a legal requirement. Even in Canada, where this step has been agitated by labor organizations, no such action has been taken, nor is there any likelihood that such legislation will be passed in view of the rapid spread of vacations with pay.

Pensions. Pensions have been rapidly becoming a part of the industrial fabric of America, at first slyly in the form of informal pension plans in the

nature of special treatment of individual cases, and later more openly through the adoption of formal pension plans. The topic is subject to a great deal of dispute, and some companies, which established pension plans some years ago on a rather liberal basis, are beginning to find that the accumulating pension cost is much higher than they had anticipated. The tendency now is, partly in order to keep down the pension cost of companies, to put pension plans on a contributory rather than the non-contributory basis on which most of the earlier pension plans were based.

Stock-purchase and Savings Plans. A good many companies have provided for the purchase of the securities of the company by the employees. At first such plans were established largely in the expectation that they would increase the loyalty and the efficiency of the employees by giving them an interest in the company. Some of these plans were very generous, the company in many cases making a partial contribution.

More recently, the emphasis has been placed on the thrift and savings aspect of the purchase of company securities by the employees, and the contemporary stock-purchase plans have therefore taken on a somewhat more conservative aspect.

One large company has established what is practically an investment trust, an affiliated securities corporation, the shares of which employees buy. The securities corporation in turn purchases a variety of securities, including the bonds, preferred and common stocks of the manufacturing company, as well as the securities of other companies.

Insurance and Benefit Plans. Group life insurance has been one of the substantial developments of the last ten years. Altogether there was approximately \$6,500,000,000 of group life insurance in effect at the beginning of 1928. At first, a large proportion of group life-insurance plans were non-contributory—that is, the company paid the whole cost—but more recently there has been a very strong tendency toward having the employee share in the cost.

Similarly, there has been a decided growth of benefit plans, a movement which began earlier than did group life insurance. These benefit plans provide a scale of benefits for certain disabilities including accidents, sickness, and death. In many cases they exist side by side with group life insurance. In other cases they are more or less a substitute for group life insurance. As in the case of group life insurance, there has been a movement toward requiring contributions from the company and also toward the administration of the mutual-benefit fund by an employees' committee with the advice and cooperation of executives of the company.

Vocational Adjustment. The importance of the preparation of job descriptions and job specifications has been much discussed, but until recently the discussions had not led to much definite action, the logical step following job analysis. Such specifications are essential for any plan of job classification and salary standardization. One distinct tendency in job analysis is the setting-up of a statement accentuating the "job difficulties."

The introduction of new employees to their jobs, especially to the foreman and to the fellow workers, and to their environment is being performed more effectively than ever before with distinct advantage not only to the company

but also to the employee. Increased output and increased earnings during the initial period of employment and reduced turnover among new employees are the results to be gained.

Gradually the idea of transfers and promotions from within the organization is spreading, without, however, taking the form of a rigid rule which prevents the recruiting of necessary specialists from outside the organization.

The rating of rank-and-file employees, which was much practiced some years ago, has largely been eclipsed by the growing attention to the rating of persons of possible eligibility for promotion to executive positions of greater responsibility.

Promotion within the company is a policy adopted by a few companies with good effects on the morale of the organization.

Health and Sanitation. Promotion of health and sanitation has probably been the least effective of all movements in personnel administration, but this is a subject which is beginning to attract a great deal more attention. The costs to the company and to the employees of ill health, consequent absence from work or inefficiency on the job, are regarded by many as vastly more important than the accident problem to which a great deal of attention has been given in the past.

In nearly all large companies medical examination prior to employment is the rule, but compulsory periodic medical examination for those already on the payroll has not yet been generally adopted. There are some companies following this policy and they are emphatic in their praise of it, claiming that it has been attended by no serious complications or objections on the part of employees.

In most companies, however, emphasis has been placed on health education rather than upon compulsory examination, and the general practice has been to concentrate not so much on the rank-and-file employees as upon the supervisors, who in turn carry the message of the health program to the employees. This is another good illustration of the advantages of a decentralized responsibility in personnel administration.

Safety. Because of the spectacular losses resulting from industrial accidents, a great deal of effort has been expended on reducing the number and seriousness of such accidents. Workmen's compensation legislation has been passed in all but three of the states, and safety work is vigorously promoted in many companies both large and small.

Results from this phase of industrial-relations work can be isolated more easily than from any other, and this very quality of tangibility has undoubtedly had a great deal to do with the interest shown in accident prevention. Certainly the record of accomplishment is so remarkable, in companies where sustained and intelligent effort has been made, that it should serve to convince any set of officials of its value.

Figures issued yearly by one large corporation indicate what can be done. From 1906 to 1926 serious and fatal accidents decreased 60.22 per cent, and from 1912 to 1926 disabling accidents (including all accidents with loss of time greater than the working turn) were reduced 83.81 per cent. This decrease has been concurrent with a marked expansion in properties and in numbers of employees. The results have been accomplished by careful

engineering, which has removed physical hazards in the plant or on machines; by keeping complete records of accidents subdivided by cause, which indicate where added precautions are necessary; and by a ceaseless campaign of education. Each is necessary; but perhaps the educational campaign has yielded the greatest returns.

About \$20,000,000 has been spent on accident prevention since Jan. 1, 1912. Had accidents continued at the 1906 rate, however, far more would have been paid out under the various state compensation laws to the injured and their families. If, as a large insurance company recently stated, it is true that to every dollar of compensation cost resulting from an accident must be added \$4 to pay for lost time, labor turnover, waste of materials, interference in production, and other conditions arising out of the accident, the saving from accident prevention is many times greater.

While for some years safety education was directed largely toward rank-and-file employees, it has been found by another very large company that still greater improvement can be made by concentrating the safety educational personnel activities and of carrying out the personnel program through and by the line organization.

Service to Employees. In the early stages of the personnel movement in America, a relatively large proportion of attention was devoted to what was called welfare work, comprising such activities as social clubs, recreational activities, camps, athletic activities, employee publications, company stores, sales and discounts for company products, legal aid, housing, and restaurants.

Probably as much is done by companies today as formerly along these lines, but this general group of personnel activities is much less conspicuous because it is being overshadowed by many newer and relatively more important activities.

There has also been a tendency to eliminate certain classes of personnel service and to continue only those which have a direct bearing on the efficiency of the employee, his earning capacity and, by implication, his value to the company.

Other activities which have a much less direct bearing on the company's interest are being turned over more and more to actual administration by the interested employees themselves, and many of these are financed almost entirely by the employees. This gives employees an increased measure of autonomy and a more self-respecting status. This tendency is a good illustration of the trend away from a paternalistic attitude toward employees.

Joint Relationships. The term joint relationships is used in the United States to designate the dealings between management and employees on matters of mutual interest, particularly as affecting such vital subjects as wages, hours, and working conditions; discipline and grievances; and efficiency and economy of operation. In industries in which employers recognize trade unions, joint relationships usually are handled between the management and the union organizations. Union contracts customarily cover wages, hours of work, and general conditions in the shop, and occasionally they include agreements for the mediation or arbitration of disagreements, for unemployment insurance, or for other subjects outside the routine of ordinary

union negotiations. There has also grown up in some industries a system of union-management cooperation, having for its purpose joint endeavors toward the promotion of operating efficiency, the reduction of costs, and the building-up of morale.

Employee Representation. Perhaps the most impressive development of recent years in connection with joint relationships in American industry is employee representation. Under this classification are included all formal agreements for direct dealing between management and representatives elected by and from the employees in an individual company or plant.

The representation movement as a conspicuous part of industrial management dates from about 1915 and the period of its greatest growth did not begin until after the United States entered the World War. In the period of business depression beginning in 1921, a considerable number of plans were abandoned, but in the last five years representation has shown a steady growth.

Under the typical plan of employee representation the workmen of a single company elect representatives from among their own number, usually by voting districts arranged in such a way that each representative has for his constituents fellow workers with whose conditions and jobs he is intimately familiar. These employee representatives deal with representatives of the management through joint conferences and joint committees and in other ways. The authority of the shop committees or works councils and the scope of subjects which they are authorized to consider vary in the procedure of different companies. While in a few cases, employees are prohibited from joining unions or from joining a particular union that has been in active opposition to the employing company, it is usual for a representation plan to provide explicitly or tacitly for the indiscriminating employment of union and non-union men.

In addition to the organized practices in joint relationships that have been discussed, there are many less formal methods of dealing with subjects of mutual interest. In some companies the approach of the employees to the management is limited to line officials, with whom the individual workman is required to take up grievances or suggestions. In others the personnel department functions as the point of contact between management and employees. There are infrequent cases in which members of the company's boards of directors are elected by rank-and-file employees.

An important function of any procedure in joint relationships is the exchange of information and opinions between management and workpeople. Sometimes this is effected through a representation plan or an agreement for union-management cooperation, sometimes through employees' newspapers or other plant publications, and sometimes through more or less formal suggestion systems under which workmen are encouraged to submit to the management their ideas as to improving conditions or methods of operation. Usually these suggestion plans include the payment of awards for valuable ideas that are adopted.

Interest in Personnel Administration Growing. In the last few years there have been times when, on the surface, it might seem as though the personnel movement in America had received a setback. This impression was caused

largely by the fact that at various times there seemed to be an unusual number of personnel men looking for positions. It may be stated that there is vastly more interest in personnel administration in America than ever before and that this interest is on a sounder basis. For some years it was difficult to the factory manager or the president or other line officials to take an interest in personnel problems, the inclination being to refer all such matters to the personnel man. With the growing recognition that personnel administration on a sound basis has a definite relation to the business success of the organization, a good deal of this former indifference has disappeared.

Furthermore, it is being recognized that sound management has a very definite relation to the interests of the employees, and that the introduction of effort-saving machinery and labor-saving management and the development of better morale almost inevitably result in greater output as a result of which the employees receive increased earnings.

An interest in personnel administration has become an eminently respectable subject for discussion in business meetings, especially as the subject-matter is approached in terms of management. Indeed, it would be practically impossible to keep the subject of personnel out of any meeting of executives discussing almost any management problem, whether it be a meeting of treasurers or comptrollers at a conference on financial management; of factory executives at a conference on production; of sales executives at a conference on marketing; of office managers discussing office management; or at a round table of presidents discussing problems of general management.

What appeared to be a period of declining interest in personnel administration from approximately 1920 to 1924 may now be interpreted as a period of transition which has led to a sounder concept of the function of personnel activity in the management of the concern and of its relation to the welfare of the community at large.

CHAPTER II

BUDGETING PERSONNEL REQUIREMENTS

BY CHESTER P. GRASSMUCK, *Department of Planning and Research,
Philadelphia and Reading Coal and Iron Company*

Budgeting is a method of planning operations and measuring the financial results by a coordination of all the functions and controlling the actual performance obtained by means of a periodic comparison with the standards set up. It is a means by which general executives may express their ideas of policies as to their respective functions. It is no alchemy or panacea which, when once developed, will permit the executive to sit back in his chair and let the budget do the rest. It is a means of securing control of an enterprise based on a prearranged plan or program for a definite period.

The successful operation of a budget system of control depends to a great extent upon the ability of the management to enlist the cooperation of every employee in a supervisory or managerial position. These men may be willing to estimate operations for a future period, but unless they cooperate to the fullest extent to keep the actual performances within the budget, the real purpose of the budget, namely, the control of every phase of the business to secure the most economical operation, will be defeated.

The pay-roll budget is a big step forward to that end if, at the beginning of the year, instead of entering the new period without some definite plan of growth, a program is set up which clearly outlines the policies to be followed as to personnel and pay roll.

A good pay-roll budget makes possible a consistent policy with respect to employment and wages or salaries of working forces. It also makes possible the handling of these forces intelligently when a reduction or increase in business is anticipated.

Organization of the Company. It may be asked, Is any special form of organization required for the installation and operation of a pay-roll budget? In every company some individual is responsible for the various functions. In some enterprises these functions may be performed by one individual, in others the responsibility for each function is delegated to subordinates. No matter how complicated the organizations may be, analysis will reveal the simple fundamental skeleton on which to base the procedure.

The following pay-roll budget procedure is applicable to an enterprise producing its own raw materials, transporting them to their manufacturing plants, manufacturing the finished products, selling these products, and transporting them to the purchaser. Such a company would probably be organized somewhat like the organization chart in Fig. 1.

Installation and Procedure. *a. Organization.* It is a common practice in budget work to establish committees for each type of budget, however, due to an unfavorable experience with the results achieved by too many committees it is suggested that the educational work be direct, either in talks or propaganda written for the purpose of securing the success of the budget program and that budget committees be limited, the secretary to be the man responsible for the installation of the budgetary program.

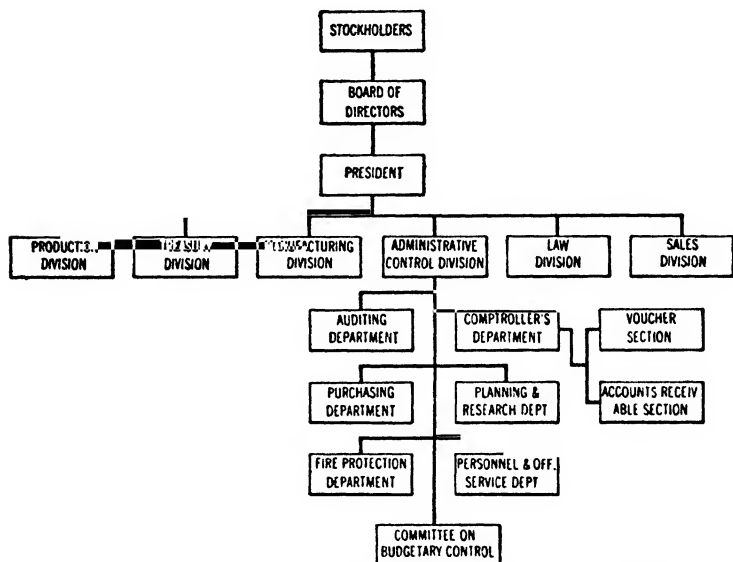


FIG. 1.—Plan of organization of XYZ Oil Company and subsidiaries.

b. Forms and Instructions. In the case cited above, to the secretary is delegated the actual work of preparing forms, procedures and instructions. His first step is to examine all personnel records and prepare a form which is acceptable to the comptroller and to the operating executive in that it is all inclusive and from the administrative viewpoint, in that it gives the information required to control this phase of the business.

In order that managers have a clear understanding of the way to complete these forms, instructions are prepared in detail explaining exactly what is to go into each column and opposite each classification. All forms and procedures are to be approved by the budget committee.

As an example of such study various forms are shown and we shall follow through the procedures of their preparation. A sample of explanatory instructions follows:

Pay-roll Budget

XYZ Oil Company

Aug. 22, 1930

- Purpose:** To set up the estimated pay roll for the last three months of 1930.
- Preparation:** This information is to be prepared by companies by the planning and control division of the operating and construction department under the supervision of the superintendent, who should be furnished forms, explanations and any other information which will be a basis for the preparation of the estimates required.
- Units:** Columns a, c, and g and columns b, d, and h, should be expressed in number and value respectively. All dollar figures on this report should be expressed to the nearest hundred, for example, \$6,749 should be expressed at \$6,700.
- Basis:**
1. Preliminary estimates (various).
 2. Past performance.
 3. Contemplated plans and policies of the company for the budget period.
- Explanation:** The following columns are to be filled in by the planning and control division.
- Columns a and b** Show the actual performance in number and dollars respectively for the last three months of 1929.
- Columns c and d** Show the preliminary estimate in number and dollars respectively for the last three months of 1930.
- Column e** $(\text{Col. c} \div \text{col. a}) - 100 = \%$
- Column f** $(\text{Col. d} \div \text{col. b}) - 100 = \%$
- One place beyond the decimal point is sufficient, i.e., 20.5 %.
- The following columns are for the use of the New York office and should not be filled in.
- Columns g and h** Show the approved budget in number and dollars respectively for the last three months of 1930, as set up by the budget committee.
- Column i** $(\text{Col. g} \div \text{col. a}) - 100 = \%$
- Column j** $(\text{Col. h} \div \text{col. b}) - 100 = \%$
- One place beyond the decimal point is sufficient, i.e., 20.5 %.
- In preparing the various classifications as outlined, the following points and procedure should be considered.
- The pay-roll budget includes the wages or salaries of the personnel devoted to the refining of crude oil and products, and the manufacturing of gasoline; those required to perform the supplementary or service operations in refining and manufacturing; and those involved in the administrative functions.
1. Present status of personnel.
 2. Changes in permanent personnel, such as additions.
 3. Temporary personnel to be taken on during peak periods.
 4. Salary revisions.

Pay-roll Budget.—(Continued)

Classifications:

Operating—

Process labor	}	Refining expense, crude stills.
Repairs		
Teaming		
Pipe Line		
Process labor	}	Refining expense, cracking stills.
Repairs		
Team		
Cleaning stills		
Process labor		Manufacturing expense, gasoline plants.
Repairs		
Teaming		
Physical and Meter testing		
Repairs	}	Shipping expense.
Loading		
Cleaning cars		
Labor	}	Auxiliary service.
Repairs		
Inspection		

Warehouse, other operating expense.

Supervisory

Includes personnel engaged in overseeing operating units or sections.

Refinery superintendents; gasoline-plant superintendents and foremen; foremen: tank-car department; machine shop, boiler makers, warehouse pipe fitters, pipe-line department, loading rack, refinery, meter department, gasoline blending, gasoline plant and labor; chief chemists, and gasoline-plant chief engineers.

Technical

Includes personnel engaged in technical operating functions or research. If any technician falls under the classification "supervisory," he should be classified as such, and not as "technical."

Chemists.

Clerical

Includes personnel required in refinery or gasoline offices to handle records.

Accountants, clerks, timekeepers, and stenographers.

Labor:

Productive
Direct

Includes personnel devoted directly to refining and manufacturing operations.

Pipe line walker (Glenn Pool naphtha line);

Engineers (vacuum plants); stillmen and helpers;

Pumpers, housemen, topmen, treaters, engineers, blenders, oilers, line walkers (meter department), and drip collectors.

Productive
Indirect

Includes personnel required to perform the supplementary operations.

Machinists and helpers, blacksmiths, toolmen, welders, electricians, boilermakers and helpers, boiler firemen, carpenters, brick masons, pipe fitters and

Pay-roll Budget.—(Continued)

threaders, pipe line gagers and walkers, repairmen, metermen, gagers and samplemen, shell cleaners, tube blowers, engineers (auxiliary service), firemen, meter testers, air testers, line walkers and pumpers and gaugers (pipe-line department), gang pushers and troublemen.

Other Includes personnel required to perform other operations not classified as productive, direct or indirect, repairmen (car department), garagemen, janitors, truck drivers, rackmen, laborers, auto mechanics, and messengers.

Construction Includes personnel required in installing and constructing new plant and equipment.

General See General Expense Budget for explanation and data.

Flow

For Signature and Approval Superintendent planning and control division.
Vice president and general manager.

Vice president in charge of manufacturing.

Chairman of budget committee.

Copies to

Vice president in charge of manufacturing.

Secretary of budget committee.

Vice president and general manager.

1931 PAYROLL BUDGET

(Expressed in number & dollars)

----- Company
----- Division
----- Department
----- Section

	a 1930 b 9 Mos. act. 3 Mos. est.		c Preliminary estimate 1931		e f % Change (+ or -)		g h Approved budget 1931		i j % Change (+ or -)		
	Number	Value	Number	Value	Col. c from a	Col. d from b	Number	Value	Col. g from a	Col. h from b	
Executive											1
Supervisory											2
Technical											3
Sales											4
Clerical											5
Labor											
Productive (direct)											6
Productive (indirect)											7
Other											8
Total Labor											9
Total Section											10

Approved _____
(Section head)

FIG. 2.—Form for pay-roll budget of one department.

1. The form shown in Fig. 2 covers a section of one department, such as the voucher section of the accounting department as shown in the organization chart in Fig. 1.

2. The form shown in Fig. 3 covers departments, divisions or companies.

3. The monthly break-up of the first two forms is shown in Fig. 4.

Preparation. a. Organizing. Some one individual must be responsible for the operation of the pay-roll budget. However, this does not mean that the entire responsibility for its working is to rest upon one individual, but rather, this person is to act as a clearing house for matters relative to the operation of this budget.

Every individual who is charged with the responsibility of supervising personnel shall be required to assist in the preparation of the pay-roll budget. The major executives should not be asked to study many details which the

1931 PAYROLL BUDGET

(Expressed in number & dollars)

----- Company
----- Division
----- Department

	a 1930 9 Mos. act 3 Mos. act.		c Preliminary estimate 1931		e % Change (+ or -)		g Approved budget 1931		i % Change (+ or -)		
	Number	Value	Number	Value	Col. c from a	Col. d from b	Number	Value	Col. g from a	Col. h from b	
Executive											1
Supervisory											2
Technical											3
Sales											4
Clerical											5
Labor											
Productive (direct)											6
Productive (indirect)											7
Other											8
Total Labor											9
Total											10
											11
											12
											13
											14
											15
											16
											17
											18
											19
Total all											20

Approved _____

President

Division head

Department head

FIG. 3.—Form for pay-roll budget for departments, divisions, or companies.

general executives should work out in preparing this budget. He must receive, however, the budget in a form that will give him a comprehensive and composite picture of each department in his unit so as to be in a position to give department heads the benefit of his advice and counsel resulting in a program which is in entire harmony with his judgment and the general plans of the company.

If this cooperative functioning between major and general executives is feasible, then the same procedure should be followed in each unit down the line of organization, namely as shown in the organization chart, division, departments, sections, etc.

Experience proves that the best results are obtained when the original estimates are prepared by the persons who are later to be held responsible for the execution of the estimates, thus each manager will have the composite picture of the requirements for his unit.

b. Estimates. Companies having complete budgetary programs have source for the data in their various expense budgets, such as general expense,

1931 PAYROLL BUDGET

(Expressed in number & dollars)

----- Company
----- Division
----- Department

	a		b		c		d		e		f		g		h		i		j		k		l		m		n	
	Budget 1931		
	Number	Value	Number	Value	Number	Value	Number	Value	Number	Value	Number	Value	Number	Value	Number	Value	Number	Value	Number	Value	Number	Value	Number	Value	Number	Value	Number	Value
Executive																												1
Supervisory																												2
Technical																												3
Sales																												4
Clerical																												5
Labor																												6
Productive (direct)																												7
Productive (indirect)																												8
Other																												9
Total Labor																												10
Total																												11
																												12
																												13
																												14
																												15
																												16
																												17
																												18
																												19
																												20

- Designate figures as preliminary or approved.
- .. Designate month.

Approved _____
(President)

(Division head)

(Department head)

FIG. 4.—Form showing pay-roll budget by months for departments, divisions, or companies.

operating or manufacturing expense, etc., where all items of pay-roll must be classified in the same way as in the pay-roll budget. The pay-roll budget in such a case is merely a statistical summary which grows in importance in proportion to the size of the company using it.

After the preliminary estimate for each division and subsidiary has been considered and approved by the budget committee, they are returned to their source and become the working program or policy for the various sections and departments as regards to personnel and pay-roll. In no case should

the budget be considered as iron clad but can only be revised on the approval of the budget committee, in such instance the revised budget follows the same procedure as the original estimate.

Periodic Reports. The tendency in most organizations is to expect the supervisory head to operate his unit efficiently without knowing the results

PAYROLL

----- Company
----- Division
----- Department
----- 1931
----- (Month)

	a	b	c	d	e	f	g	h	i	j
	This month			% Change		Months			% Change	
	Budget 1931	Actual		from a	from c	Budget 1931	Actual		from f	from h
		1931	1930	(+ or -)			1931	1930	(+ or -)	
Average no. of employees										
Executive										1
Supervisory										2
Technical										3
Sales										4
Labor										
Productive (direct)										5
Productive (indirect)										6
Other										7
Total Labor										8
Total no. of employees										9
										10
										11
										12
										13
										14
										15
										16
										17
Payroll										
Executive										18
Supervisory										19
Technical										20
Sales										21
Labor										
Productive (direct)										22
Productive (indirect)										23
Other										24
Total Labor										25
Total payroll										26
										27
										28
										29
										30
										31
										32
										33
										34

Signed _____
(Comptroller)

FIG. 5.—Form showing estimated and actual performance.

obtained. Experience proves that the more a man learns about the details of expenses and costs within his unit, the better qualified he will be to reduce them, with the broadening effect of causing him to see the relation of his unit to others.

Periodically and according to a definite program, reports showing the actual results in comparison with the budget and past performance must be prepared. Many attempts at budgetary control have failed because the importance and necessity of checking the execution or actual performance of the program against the budget was not realized. The set-up of these reports must not necessarily vary from the forms used in the preparation of the estimates. The classifications should remain the same but the columnization includes estimated and actual performance as suggested in Fig. 5.

The respective information shall be compiled by sections and departments, divisions and companies in the same detail in which the budget is set up.

Advantages. With this plan established we find we have experienced these advantages:

1. Every one is required to think his function through to the end.
2. Executives are compelled to think of their work from a strictly business standpoint and to make such plans for the future as will fit in with the program of the management. Having studied their functions they will instinctively try to beat their estimates, which means they will continue to study and show immediate improvements.
3. It gives authority with responsibility in that it enables the division, department and section heads to understand and be responsible for the number of employees and the pay-roll expenditures within their unit.
4. All individuals in managerial or supervisory positions share the responsibility with each other by having the budgets on a departmental basis. The old army game of "passing the buck" cannot exist.
5. It gives a check on the operating efficiency of each department through the knowledge which it supplies the executive of the predetermined operating requirements and the actual expenditures for the period.
6. It increases the interest of the entire supervisory organization of a business and unites their efforts in a common endeavor to secure greater operating efficiency.
7. It sets up the requirements of all units of the business. By careful planning the demands for increased number of employees can be anticipated, thereby avoiding the disturbances arising from misfit employees.
8. By analyzing personnel and pay-roll according to the classification shown on these forms, it provides information or standards which may be used by the salary committee in comparing the various classifications between all subsidiary companies and between units within the company.
9. Every one in a managerial or supervisory position feels he has had something to say in the management of company affairs, has given his views as to policies, has established a goal for his unit and knows his plans for the period.

Briefly, it makes possible the forecasting of labor needs and costs, the control of labor cost, the placing of responsibility for labor cost, and an incentive to department heads to reduce and control costs. Budgets, no matter how complete, can never be a substitute for management. When a man has been given a job, he should be supplied with the tools with which to do that job.

The results which one of the larger corporations in the country obtained from a pay-roll budget installed as of Jan. 1, 1924, will exemplify the value of the method. During the year their total volume of sales increased 18

per cent; they reduced their total pay roll 12 per cent and the average individual salary increased 5 per cent. This material satisfaction was not the only result. Better salaries brought better workmen into the company, with the natural result of raising the standards of workmanship and increasing the output and sales; finally, the ultimate result of the profits to the company and all individuals—a perfect circle of good management.

CHAPTER III

MAINTENANCE OF THE WORKING FORCE

RECRUITING PERSONNEL

By W. C. BOWEN, *Personnel Manager, International Telephone and Telegraph Corporation*

One of the absorbingly interesting problems of present-day management, the manifold task of maintaining an adequate working force, resolves itself into the following principal divisions:

1. Recruiting the personnel supply, including an evaluation of sources both within the organization and without.
2. Preparation of job classifications or specifications for assistance in recruiting; in other words, securing a knowledge of job requirements.
3. Selection of applicants who fulfill the requirements of the job, having in mind the physical, mental and temperamental qualifications required.
4. Introduction of the applicant to the job and systematic follow-ups.

Placing of Responsibility. The work of recruiting and selecting personnel is generally delegated to some specific individual or department. In an interesting report on Industrial Relations in the Metal Trades, prepared by the committee on industrial relations of the National Metal Trades' Association in 1929, it was found that of approximately 1,000 plants in the metal trades, 227, or 25 per cent, have centralized employment departments; 455, or 50 per cent, delegate employment to a specific individual; 220, or 24 per cent, leave employment in the hands of departmental foremen. It cannot be assumed that the practice of hiring new workers in the metal trades is indicative of the practice of industry as a whole, but the percentages shown above are of startling interest. Many large, medium sized and even small companies have seen the advantages to be derived from organizing a centralized employment or personnel department to function in the selection of employees. However, whether there be a centralized employment office, a specified individual, shop foremen or office supervisors in charge of this important function, their responsibilities should be clearly defined and definitely understood by the rest of the organization.

Limitations of Personnel Policy. The individuals to whom this work is entrusted should be thoroughly conversant with whatever restricting limitations the management may wish enforced. These limitations may cover a number of factors such as education, citizenship, or distance from plant or office. Some concerns definitely stipulate that they will employ only work-

men residing in definite localities; others stipulate that their workmen must be American citizens.

Job Classifications and Specifications. In the process of preparing job classifications or specifications to assist in the selection and maintenance of the working force, the promotional possibilities of various jobs should be kept in mind. When vacancies occur it is frequently possible through the assistance furnished by these job specifications to locate candidates in the organization who may be in line for the vacancies. Such procedure forestalls any possible criticism employees might have that they were not being considered for promotion when vacancies occurred which they believed they were qualified to fill. Frequently whole series of promotions within the company can be worked out when a vacancy occurs with little or no additional expense to the company. Those companies which have made a careful analysis of the requirements of the jobs in their organization and which have definite training programs and a thorough promotional procedure find it easier to attract a better type of worker to their organizations. Their reputation for fair dealing and sincere interest in the progress and development of their workers spreads quickly.

Selection of Applicants. When it is not possible to fill vacancies in the staff from within the organization, it is necessary to select the best qualified applicants obtainable from the labor market. The technique of selection varies widely in different companies. The individual or department responsible for this function must know where to go to find the best qualified applicants and once the correct source is found, the machinery of selection starts in motion. After preliminary interviews are given, the survivors of these interviews are requested by some companies to take a series of tests to determine their various abilities and aptitudes for the openings in question. Many concerns request applicants to take physical examinations and make a thorough investigation of their references before deciding upon their employment. It is needless to say that the spirit with which the members of this department do their work is of greatest importance. Applicants should be courteously received and given every consideration possible irrespective of whether there is an opening for them or not.

Sources of Supply. Chief emphasis in this article will be placed upon a review of the various sources of supply to which companies may go to replenish their working forces.

Job Seeker. Possibly the most common and fruitful source of labor supply is the job seeker who applies at the employment office in person. He may have been attracted to the company because of its good reputation or because friends of his worked there or he may be a professional job seeker. The quality of this supply depends to a considerable extent, as intimated above, upon the reputation of the company in the community. The amount of this supply predicates a considerable idle surplus of applicants from which to select. This supply is naturally greater in times of unemployment than during boom periods. If these job seekers are carefully interviewed and applications accepted from those whose qualifications merit careful consideration, many of the openings which occur in the company can be satisfactorily filled by these applicants.

Letters of application are a good medium through which to obtain workers. This source of supply should be cultivated by the acknowledgement of all letters which are received, informing the writers as to the possibilities of their present or future employment. Where it appears that the qualifications of the writer indicate that he is a candidate for consideration, a good procedure, provided a personal interview cannot be readily arranged, is to forward an application blank with the request that it be returned together with a snapshot or photograph, if possible. If the application appears favorable, the applicant can be requested to call for an interview either at his own or company's expense.

Friends, Relatives. Still another source is the friends and relatives of present employees, stockholders, directors, customers, and others personally interested in the company. Some companies have a definite policy not to employ relatives of present employees. There is more justification for such a policy in a small firm than in one of greater size.

Ex-employees. Employees who have previously worked for the company and who have been released due to lack of work are often a good source of supply. Their records are generally on file in the employment office, so that the company can be fairly certain regarding their work performance.

Office Appliance Companies. Favorable consideration should also be directed to office appliance companies such as the typewriter, comptometer, and accounting machine manufacturers who maintain employment bureaus to supply skilled operators to their customers.

Hospitals and Penal Institutions. Many factories use hospital and penal institutions as a source of supply. Frequently, employees who have been injured are available for new openings upon their release from hospitals. Likewise ex-criminals are a source to be considered. Many concerns feel a sense of public duty in employing a certain percentage of these men, thus aiding in their rehabilitation.

Advertising. Another source for recruiting personnel is through the medium of the advertising columns of newspapers and trade journals and also by the use of circulars and posters. Before placing advertisements, a careful analysis should be made of the facilities of the different newspapers and journals, as some advertising mediums are better for certain classes of help than others. Advertisements should be brief, specific, and well set up. Insistence on favorable locations in the various media employed is important. Moreover, advertisements should be inserted on days when they will bring best results. A careful analysis of results over a period of a few weeks will indicate which days are preferable for advertising.

Employers in search of additional personnel can profit from a careful study of the "want ad" columns in the newspapers, as these often bring to light desirable applicants. Frequently, applicants who advertise in the want ad columns are of higher grade than the casual applicant who applies at the employment office. If these advertisements are of interest, postal cards can be sent with the request that the applicants call for an interview.

When placing advertisements, a choice must be made between open and blind advertising. When open advertisements are used, and it is preferable not to have large numbers apply in person, applicants can be instructed

in the advertisement to write, rather than apply in person. In the case of specialized positions it is frequently better to insert blind advertisements, although there are certain disadvantages in this, one being that those who are employed in responsible positions often hesitate to answer blind advertisements for fear the advertisements may have been inserted by the concern for which they work.

Circulars and posters are used by factory executives to obtain additional workers, especially in periods of scarcity of labor. These mediums often bring immediate results. It is customary to have employees take the circulars home and pass them out among their friends and neighbors. Street car posters, signs in windows, and bulletin boards are also employed.

Schools and Philanthropic Agencies. Other profitable sources of supply are the high schools, trade, commercial, and business schools, vocational guidance bureaus, Y.M.C.A.'s, Y.W.C.A.'s, churches, lodges, and trade unions. A company eager to secure the best grade of personnel for junior positions makes it a point to keep in close touch with sources of this type. Many concerns invite school teachers and superintendents to the company's plant or office to inspect the working conditions and meet the supervisory staff. They supply the schools with printed literature regarding company activities. Where such personal contact is maintained, better results in the way of personnel can be expected.

Colleges and Universities. An advantageous source of supply for personnel of the higher grade are the academic, business, and engineering colleges and universities. Various concerns have developed a high degree of skill and technique in recruiting college graduates for work in their organizations. It is generally recognized that these men are a distinct asset to any company, provided the right type is selected and given adequate training and supervision after employment. The general practice in carrying out this recruiting is to make arrangements with the colleges and universities for the visits of scouts and recruiting agents well in advance of the time of their scheduled visits. Upon their arrival at the colleges, the personnel offices place the students in touch with these representatives at which time the opportunities open to the students are discussed. The degree of success obtained in securing representative college men depends to a great extent upon the ability of the men representing the companies in judging men and interesting the students in the advantages and opportunities open to young men in their organizations.

Scouting is still another method followed in obtaining workers. Rural districts, foreign language groups, recent immigrants, and boarding houses are common sources from which the scout seeks his men. Scouting is resorted to for the most part in times of stress when labor is scarce. It is not looked upon with any great degree of favor by employers, as it often results in taking workers away from competing companies. Scouts are frequently sent to distant cities to recruit labor. When this is done, it is important that men employed by this method be familiar with the terms of employment, working conditions, wages, terms of contract, and other essential details. Failure to give applicants this information often results in misunderstandings and consequent resignations.

Public and Private Employment Offices. One of the most widely patronized sources for securing workers is the public, private commercial and private non-commercial employment agencies. Patronage of these offices varies in different localities and cities, depending to a considerable degree upon the efficiency and reputation of the agencies is question. Both types of offices have their ardent supporters and also their severe critics. Considerable criticism has been launched against the public and private commercial agencies for various reasons. One of the principal objections to the public agency has been that the majority of offices have been operated inefficiently. This can be explained to a considerable degree by the lack of adequate appropriations to carry on the work effectively. Managers have been underpaid and poorly trained and their offices have not been well maintained. In most instances the better type of applicant has not made it a practice to use the services of the public offices, believing that these offices could not offer them attractive jobs or materially assist them in their search for work. Employers as a rule have not used the services of these agencies knowing the unsatisfactory conditions existing in most of them. The success of these public offices depends on the wholehearted cooperation of employers and, when this is lacking, little progress can be made.

Notable work has been done by the Cleveland public employment office. This office has succeeded in securing the cooperation of all types of employers in Cleveland and has successfully served as a clearing house for all types of workers in that city. The experience of this office demonstrates the fact that these public offices can obtain good results if they have the wholehearted cooperation and confidence of employers. This cooperation is not likely to be forthcoming, until the operation of these offices is removed from the realm of politics and until steady appropriations are guaranteed.

With reference to the organization of the labor market, there is reason to hope that within the next decade or so we shall have a well-organized system of national public employment offices throughout the country, cooperating closely with existing state and municipal offices. Such a system would afford an opportunity to transfer unemployed workers from sections of the country where there is a dearth of jobs to sections where jobs are more plentiful. In other words, it would make possible a continuous redistribution of the labor supply, as a result of having at hand centralized information covering the various sections of the country. The system would operate in a manner similar to the Federal Reserve System in the field of finance. The organization of such a system could be made to supply much needed data on employment statistics and economic conditions in various sections of the country.

Private non-commercial agencies, such as those of trade associations, trade unions, and seamen's unions are operated for the benefit of employers and workers alike. In addition to these are the fraternal, religious, and benevolent institutions whose prime reason for being is to serve needy individuals who come to their attention.

Private commercial agencies are extensively used, especially in large cities where office and salaried help is required. They also compete with the public employment agencies in supplying common labor and shop workers. Many agencies of the latter type have contracts with the various railroads

under which they guarantee to supply a certain number of men to the railroads each month. These agencies also supply lumber, farm, and harvest workers. Many abuses have crept into this type of agency and the various states have found it difficult to control agencies of this type which violate its laws.

Many of the higher grade agencies of the commercial type are doing excellent work in supplying the needs of employers. In New York, for example, there are few large firms which do not contact with certain picked agencies when there are positions to be filled. Certain executives are not willing to use the agencies when looking for executive material, but there are many others who do make use of their services.

Unfortunately, private agencies, especially those dealing with manual labor, have been criticized for glaring abuses. They have been accused of misrepresentation of jobs, sharing fees with dishonest foremen, making a high labor turnover profitable for both the agent and foreman. They have likewise been accused of refusing to return fees to applicants who have failed to secure work through them. Frequently, the immediate interests of private agencies have been directly contrary to the interests of industry and the community.

Probably the most common complaint lodged against the private agency is its lack of discrimination and failure to exercise judgment in supplying the needs of employers. It is a common practice for these agencies to send large numbers of applicants to employers with the hope that one of them will have the qualifications necessary to fill the job. However, if the employer warns the agencies against such procedure and gives definite specifications of the opening to be filled, this difficulty can be minimized, if not entirely eliminated. The fault does not all lie at the door of the agency. The employer all too frequently is vague in describing the qualifications which are required and forces the agency to rely upon its own judgment. Some employers fail to play a square game with the agencies and should not be surprised, if the agencies follow the same tactics in dealing with them.

Although a number of European countries and five Canadian provinces have prohibited the operation of fee-charging private agencies on account of the grave abuses of this type of agency, there is little likelihood that such action will be taken in the United States, at least for many years. The Supreme Court in passing upon a New Jersey law regarding private agencies ruled in 1920 that the regulation of fees of a private employment office was unconstitutional, because this business is not affected with public interest sufficiently to warrant the fixing of charges. A state may not prohibit the existence of these agencies within its borders, although in Wisconsin and New Jersey state officials may refuse applicants for licenses, if it is deemed that adequate placement agencies already exist. It has been recommended as a general procedure by those interested in regulating private agencies, that the character of the applicants for agency licenses be thoroughly investigated before the licenses are granted; that the suitability of the proposed premises of the agency requesting the license be examined and the need for such an agency in the community be reviewed. Certain states have definite legislation covering one or more of these points.

The fee-charging agencies have a legal existence in the United States. From a practical and reasonable point of view, they will undoubtedly continue to thrive. They serve selected types of workers and professions with greater efficiency than do the public employment offices at the present time. They perform an economic and valuable service to the job seeker and as long as they continue to function efficiently and satisfactorily, there is undoubtedly a place for them in our system of society.

Introduction to the Job. Nothing has been said thus far regarding the fourth point raised in this paper, the introduction of the applicant to the job and systematic follow-ups. It goes without saying that once the worker is hired, the most important problem is to adapt him to his job and thus eliminate unnecessary turnover. Success in accomplishing this hinges upon the proper classification of jobs, the formulation of definite lines of promotion and the ability to judge workers according to their qualifications and merits. The job of securing competent workers will be simplified and made easier for every company which establishes and maintains proper standards of employment, hours of labor, safe and sanitary working conditions. Such companies need show less concern about their problems of securing competent workers, as their reputation for fair dealing will attract to their employment offices sufficient workers with qualifications of the sort to satisfy most of their needs.

THE EMPLOYMENT INTERVIEW¹

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Function of the Interviewer. It is the function of the interviewer to bring together, analyze, and digest all of the information that bears upon the suitability of an applicant for a given job as well as his general value as a personnel risk for other possible positions. He sums up all of this information into an individual diagnosis and decides to employ or reject the given applicant. The interviewer, himself, is the most important element in the entire employment situation. His knowledge, experience, interviewing technique, and diagnostic ability become the index to the quality of personnel employed. Tests and other tools to be used can aid and guide him in getting a better knowledge of certain aspects of a given applicant's abilities but they will never alone and of themselves furnish sufficient information to afford a safe basis for securing employees, for they do not evaluate the personality. His special training and experience should have given him a clinical knowledge that forms the background for understanding the physical and mental factors that underlie faulty human adjustments bringing about failure at work or failure in other life situations. This knowledge constitutes an understanding of the personality, a diagnostic acumen that enables the interviewer to make satisfactory estimates of the possibilities in any given applicant for successful adaptation to work.

¹ Taken by permission of the publishers from "Psychiatry in Industry," Harper & Brothers.

If sound progress in employment work is to be attained, we must cast aside theories of inborn, mystical ability to "size people up" or "to read character." What all honest investigators are after is a discipline that presupposes a knowledge and a technique—a discipline that offers something more solid than guesswork.

The issues involved in work adjustments do not differ in their fundamentals from those underlying behavior problems in other walks of life. These issues can be approached in the same scientific spirit that we have sought to understand natural phenomena in general. Long since have we discarded the idea that behavior disorders, either of children or of adults are not amenable to an acceptable scientific method of inquiry. We are forced to deny the fact that people are just good or bad employees and that by some trick method the sheep can be picked out from the goats; nor do we stand any longer for the belief that there is no known way of ever telling just how an applicant will behave in a given job situation. That these things can be investigated and fairly well understood and that they can be approached in the same scientific spirit of study that we have sought to understand other human problems is now an accepted fact.

It has seemed that there was a gulf between the practical, "hard-boiled," experienced man of business with a good common-sense background who does the employing, and the laboratory psychologist whose exact methods of measurement will have nothing to do with the shrewd "hunches" of the practical man. The first in his attitude toward scientific method oscillates between a naive gullibility—swallowing hook, line, and sinker—and open resistance and antagonism. On the one hand, we find employment people who expect a simple intelligence test to select good employees for them, as though the matter of cleverness or smartness was the principle determining factor in work success. While, on the other hand, we find interviewers who will have nothing whatever to do with the whole thing, due either to a misunderstanding of the use of such methods or to prejudice against a technique in which they themselves are not trained. In other words, the average interviewer does not utilize the psychological test at its proper value.

The industrial psychologist in his ambition to settle at one blow all employment problems has sadly oversold the matter of psychological tests or himself has misunderstood their limitations, inasmuch as he too often leads the layman to feel that the psychological test itself is the selective agent. The fact is that neither one of these groups is wholly right or wrong. The interview if properly conducted and intelligently interpreted opens up knowledge concerning the applicant's past history and ways of behaving that furnish the most fruitful basis for judging what his future adjustments are likely to be; while the results of the psychological tests disclose abilities and disabilities that, when properly interpreted by the well-trained interviewer in the light of all other information about the applicant, contribute an addition to employment technique that is invaluable. But neither by itself offers an adequate method for diagnosing potential work adjustments.

We have in the interviewing situation a problem to be attacked similar to that presented to the psychiatrist in diagnosing the factors underlying his patient's behavior disorder and making a prognosis of the future outcome

We have come to the conclusion that every phase of the study of a given case as it is carried out by the clinician can be utilized by the interviewer in determining the work adjustment possibilities of a given applicant.

Importance of Detailed Knowledge of the Job. In order that the interviewer may be able to predict with any degree of satisfaction the possible success or failure of a given applicant, he must be well acquainted with just the thing that the applicant is expected to do—the job and its environment. Not only is this true from the point of view of routine work and production records but from the viewpoint of the possible effect of the work on the individual employee.

If he is skilled in his technique of eliciting information as to the individual's personality, he will be none the less ineffective in selecting good material for particular jobs unless he has so complete a knowledge of the work that he can relate the personality factors brought out in the interview to the particular ones desirable or undesirable in the job in question. Even such seemingly like jobs as those included under the general head of clerical work present problems in individual fitness which the interviewer cannot meet unless he has at hand a thorough analysis of the job and has incorporated this into his employment technique. Not only do the details of the work vary, but the environment, the type of supervision, degree of concentration, amount of variation within the job itself, etc., all are different, sometimes even within a limited section.

A first hand acquaintance with a task through actually working at the job itself for a short period is desirable. Every effort should be made by the interviewer to analyze his own mental content, his feelings and attitude toward the job he is studying. He should seek to put himself in the place of a potential employee and introspect on his own reactions to the given work.

It is important that he make some judgments and secure some actual information bearing upon the type of people who do just this sort of work; what sort of equipment, from a physical and mental viewpoint, is needed; what sort of social status is the group drawn from; what ages, schooling, etc., seem pertinent to this type of work. The more he knows of the personalities that succeed and those that fail the more accurate will be his employment selection. As he comes in contact with the job, he will find that often other considerations than the actual work itself are determining factors in connection with the satisfaction of the employee and his or her ultimate status. Such matters as the personalities of those supervising and at the head of the department; the ideals and standards of the department; whether loafing on the job and mediocre results are tolerated, or whether an overamount of pressure in order to meet the demands of exacting production records is the rule; whether the department as a whole is well tuned up to that sort of work achievement that gets the best out of the individual employee at the same time that the greatest amount of individual contentment and average normal health is maintained among the employees.

For the interviewer to know all of these facts means constant contact through personal follow-up actually on the job. None of these data are of sufficiently static quality to be acquired at one blow, and then retained for permanent use. Only the merest outline in the way of job specifications

and analysis can be given him through the ordinary write-up of the work. The many changing relationships that have to do with the success or failure of the people who do the work can only be fully grasped through his own intimate personal contact with those who are daily on the job.

As a reminder and special guide, there should be available carefully prepared job descriptions, job analysis, job and personnel specifications. This material is likely to change from time to time, but it will be a helpful aid in keeping before him at all times the essential facts to be considered in connection with any given job.

Methods Employed in Conducting the Interview. The employment interview may be conducted under the following main headings: (A) personal history, (B) personality study, (C) home problems.

Personal History. The personal history may for practical purposes be considered under the following headings: (1) developmental history, (2) health history, (3) educational history, (4) work history. (The interviewer should probably start the interview with the work history.)

The *developmental history* has to do largely with an inquiry into the important facts relating to the normal physical and mental development of the individual, and for practical purposes is of little use in connection with the employment technique. It is a fundamental field for investigation in the clinical study of an individual as a patient, but in connection with the employment interview, the information gathered will prove difficult to evaluate. So that this phase of the study may be practically ignored.

The *health history* is a most important, and in fact an essential field for investigation, not only from the point of view of actual past or present physical conditions that may seriously affect the applicant's chances for success at work, but as throwing light on mental conditions and personality disorders that so commonly reflect themselves in bodily complaints and influence the employee's work value. An acquaintance with psychopathology will give the interviewer an insight into the meaning of many of these supposed physical symptoms and their significance in the individual's work adaptation—how and why certain people become sick and later accomplish a neurotic adaptation toward life. These issues will be discussed in more or less detail under the heading of personality study.

It is advisable to inquire into the past health history with special emphasis upon accidents, operations, convulsive seizures, the ordinary physical defects and disorders and serious or prolonged and debilitating illnesses. Recent changes in the applicant's health and his present physical conditions should be carefully questioned. These conditions often show themselves in changes in appetite, digestion, sleep, and his feelings of general well-being. Fatigue, headaches, dizziness, constipation, eye strain, indigestion, insomnia, menstrual difficulties, and the like are brought out in the interview and these often are of considerable importance in enabling the interviewer to make judgments as to the future work value of the applicant.

Frequently the medical examiners will accept as a fair risk individuals whom the well-trained interviewer will turn down as being unprofitable material for the reason he has long since learned that the issues which actually lower the worker's efficiency and production value are not so much due to recogniz-

able physical diseases and defects, as to the mental attitude with which the individual deals with his personal and other problems; not so much what is actually the matter with him as what he thinks, or wishes, or feels to be the matter with him.

He will bear in mind, however, that he is to leave to the medical examiner the acceptance or rejection of new employees when physical conditions affecting work value are in question. A health record of the applicant will, however, often throw light upon important matters affecting physical endurance, ability to work under steady pressure, to tolerate standing jobs, lifting jobs, long hours, extremes of heat and cold, exposure, etc., and should be thoughtfully taken by the interviewer as a part of his study of the individual applicant.

Educational History. The school career and the educational background secured by an applicant for employment may throw light on many issues that determine the choice of work, and sometimes success or failure in certain jobs; it may even throw light upon the intelligence development and the drives in his personality, such as ambition, vocational interests, etc.

Such a history, when properly taken, gives a picture of the opportunities the individual has had for equipping himself, and the use he has made of these opportunities. While the practical purposes of the inquiry must be definitely limited to essential points of which the interviewer can make immediate use, still in some cases a more extended investigation is profitable. Our object here is to call attention to those essential facts that must be obtained in any given case, such as:

1. Grade reached in school.
2. Age at leaving school.
3. Going to school at present?
4. If so, nature of studies being undertaken.
5. Special vocational training.
6. Work experience that provides specialized training.
7. Future educational plans.

The *work history* should start off with an inquiry into the individual's first regular job, its nature, as well as the type of concern in which the applicant was employed, the salary he received, the duration of his employment, the reason for his leaving, the length of interval before the next job, its nature, the type of business with which it was associated, the salary received, his attitude towards the work and the people, the duration of that employment, his reasons for leaving, the length of the next interval of unemployment, and so on, and on up to his present position, or last work at which he was employed. These details should be taken personally and not necessarily secured on the employment blank.

A carefully gotten work career throws a striking light upon the personality of the applicant, and data secured from it can be included under your estimate of the personality characteristics of the individual. It not only indicates whether or not there has been a purpose and goal to which the individual has been striving, but also what degree of success or failure he has met. The work career brings out specialized interests and experiences, and becomes,

when properly taken, a valuable index to the future work ability and adjustment of the applicant.

It is important that this phase of the interview be thoroughly conducted in a scientific spirit and not hastily brushed over; for no better source is available in the entire investigation for forming safe judgments concerning the individual's work adaptability.

This, the work inquiry, places the applicant at ease, inasmuch as it enables him to talk about himself and about things with which he is entirely familiar and in which he is usually interested. It is a good idea to start the interview at this point of the history.

Personality Study. The most important phase of the interview is the inquiry directly relating to the personality make-up of the applicant.

Our first approach to this problem will be to select certain fundamental aspects of human behavior and describe them with a view to the evaluation of "the whole individual." Many of the characteristic reactions are evoked only through the social environment, and the interviewer will have to depend upon the personal history, or the individual's own account of how he has met certain given situations, in order to judge the typical reactions, trends, or drives, within the individual. Often his method of securing adequate data to make such judgements will have to be indirect and very general in approach. This account, from the individual, of his attitude toward important problems and his ways of behaving to fundamental situations must not be confused with the many forms on the market for making self-estimates of one's ability and character. These self-ratings have proved unreliable both in experiment and in daily life. But the personal history, when taken directly by the thoroughly trained investigator, brings to the surface motives, attitudes, and characteristic traits of the personality that undeniably act as the driving forces in behavior.

The value of such data will, however, depend upon the interviewer's powers of observation and his facility at analysis and interpretation. This will show itself in his evaluation of physical appearance, significant attitudes, bodily movements, mannerisms, facial expressions, voice moods, definite drives, mental patterns, and the general symptomology presented in each case. Of course, the better acquainted he is with the clinical case method of study, the greater his diagnostic ability is likely to be.

He should have read Mr. Shand's book on the "Foundations of Character"; Dr. McDougall's book on "Social Psychology," also "Abnormal Psychology," by the same author; "Social Psychology," by Allport; "The Trait Book," by C. B. Davenport; the "Foundations of Personality," by Meyerson; White's "Outline of Psychiatry," also his "Foundations of Psychiatry"; and he should be acquainted with the mental hygiene literature gotten out by the National Committee for Mental Hygiene, 370 Seventh Avenue, New York City.

That type of outline which brings into play those characteristics which most readily may be investigated, will be most serviceable to the interviewer. The following traits, or main divisions of the personality are suggested:

1. Intellectual activities.
2. Motor characteristics.

3. Temperament.
4. Self-expression.
5. Sociability.

Intelligence. We are all familiar with individuals of superior intelligence who get low grades in school, or out in life fail to make use of their intelligence; also we know the individual of dull intelligence but with a determined drive, with ambition and industry, who gets high marks in school and makes a reasonable success in life.

In other words, possession of intelligence, of quickness of perception, cleverness of learning, good memory, and adequate reasoning ability does not imply successful adjustment or solution of life problems. There are other factors, namely, habitual trends of effort in the direction of accomplishment, or what may be termed the "drive," of the personality, that have more to do with determining success or failure than the degree of intellectual development.

General intelligence may be considered to be that ability or special trait of the personality, by reason of which the individual learns and comes into possession of knowledge of his environment. It may be termed the individual's "problem solving ability," or "reasoning capacity." Like the physical growth of the individual, the intellect should progress from year to year in its development.

There are certain practical questions relating to the intelligence, that the interviewer should have in mind when he investigates this aspect of the applicant's history:

- A. Is the applicant's education commensurate with his opportunity for it?
- B. Is he alert?
- C. Has he seemed to learn from experience or is he naive and gullible and does he repeat the same mistake over and over?
- D. Is he attentive, and does he seem to fix and hold his attention well?
- E. Does he give a consistent, intelligent, well-related story?
- F. Does he seem distractible?
- G. How suggestible is he?
- H. Has he any special aptitudes, or special interests?
- I. Is his memory good?
- J. Does he show good common sense?

Motor Characteristics. We might include under this category such traits as overactivity, underactivity, speed, impulsiveness, inhibition, tenacity, skill, etc. We are all of us acquainted with the overhasty, impulsive, restless, talkative, bustling type of individual, who rushes through his duties at great speed and probably completes no task thoroughly. Then there is the slow, underactive, static individual, who cannot keep up with the pace set by the normal worker. There are all types of modifications of these characteristics, but they ordinarily are constitutional in origin and indicate the motor set or pattern in any given case. Undoubtedly well-controlled and suitably directed movements, free from haste and spurts of activity, keyed to a healthy normal rate of speed, in the long run secure the best work results.

One important thing to recognize is that the overactive individual may show powerful impulses which drive him to action in order that he may give the appearance—either to himself or others—of being in great haste and having much to do. Or, he may show overactivity, due to excessive energy output, free from the normal inhibitions that commonly are built up in the average person to permit of the wisest choice among a group of possible lines of action; while the underactive personalities may exhibit inertia, due to limited energy output or to powerful repressions and restraining inhibitions.

Questions in the mind of the interviewer might be as follows:

- A. Does the applicant display tension or "push" in his activity?
- B. Is he restless or overactive?
- C. Does he seem inert?
- D. Does he seem static?
- E. Is he overtalkative or undertalkative?
- F. Would you judge his activity to be persistent and steady? Or capricious?
- G. Does his life history indicate that he has or has not finished undertakings?
- H. Does he seem sluggish or lazy? Does he slouch as he walks or sits?
- I. Would you judge him easily fatigued?
- J. Do you think that he could be speeded up easily? Or easily slowed down?
- K. Do his movements seem well coordinated?
- L. Are his posture and gait good?
- M. Does he appear energetic?
- N. Would you judge him to be tenacious and persistent in the face of obstacles and discomfort?

Temperament. Feeling and emotion are exceedingly important constituents of personality on the subjective side; as they influence the mood of the individual they become one of the most important subjective elements in his actual behavior. The emotional attitude or set colors the outlook and modifies the individual's adjustment possibilities far more frequently, and more seriously, than is ordinarily believed to be the case. Their dynamic value in the personality is seen in the mechanism of reinforcement and repression; in pushing the individual into overt behavior, or in inhibiting tendencies to act along certain lines.

The emotional attitude, the emotional stability, and the degree of control over the feeling and emotional aspects of our lives become among the really vital issues that influence job adjustment in any given case.

It is wise then for the interviewer to acquaint himself with the psychology and pathology of the emotions, so that he may apply this information in his analysis of each applicant for a job. He can well emphasize this phase of his investigation, particularly in connection with his follow-up work on the job, where he will find that many of his impressions that seemed little more than hunches have turned out to be dynamic factors, which he now can investigate in their definite relationship to the behavior of a given personality to work.

What we call temperament may be understood as the characteristic emotional level of the individual, such as the choleric type, the phlegmatic

type, the sanguine type, etc. The leading question concerning any given individual may profitably be—what part do emotions play in his daily life? Some people have a characteristic mood that is very easily discerned. They are of a gloomy, sullen, sour temperament and disposition; or they are cheerful, optimistic, and hopeful; suspicious, timid, embarrassed, oversensitive, self-deprecatory; or pompous, cynical, snobbish, or irate. These moods and emotional attitudes greatly influence one's relationship with others and are very important factors underlying work failure, or work success.

Something may be done to change the trend of moods, through contact with the individual, through an effort to understand the origin and development of emotional sets and attitudes and through seeking to give the individual a different viewpoint and providing interests of a healthy and normal type. The results, of course, will depend on the intelligence and the cooperation of the employee, and the amount of time that can be spent in this direction.

The interviewer is to bear in mind that the significant implications in this whole situation have to do with avoiding the selection of applicants who exhibit too marked extremes of temperament and mood—the depressed, melancholic, sullen, irritable, and grouchy person, as well as the extremely cheerful, overoptimistic, exaggeratingly enthusiastic types. These extreme types are unusual and almost invariably make poor personnel risks. Everyone, of course, presents mild emotional attitudes accompanying his thoughts and actions, and when these emotional attitudes become fixed and permanent, they result in what we call traits of character.

Special Characteristics or Traits of Self-expression. *Extroversion, Introversion.* We have here reference to the tendency in individuals to make external or internal adjustments. The extremely introverted individual obtains his satisfactions within a world of his own making. Adjustments to reality of an external nature are interfered with by emotional attitudes and trends within the individual that block effective overt behavior. These individuals do a lot of daydreaming as well as night dreaming, where they are able to bring to fulfillment their repressed wishes, or to secure an adjustment that is satisfactory to them. The consequence is that sooner or later in many cases there is actual severing of a proper relation with reality. When the condition is markedly pathological, we have the beginning of a well-known mental disease—*dementia praecox*. However, many introverts are effective, brilliant people, who are able to handle their personality defects through compensations that enable them to make satisfactory life adjustments.

In introverts, real conditions are distorted in such a way as to satisfy the wishes, cravings, or viewpoints of the individual; an unreal and unnatural set of values is constructed out of life to suit themselves. There is an intense personalizing of all events and activities with which they come in contact and they develop what we call "ideas of reference," in which nearly everything that is said or done by others may have a personal bearing. On this as a background they easily build up persecutory delusions. It is easy to see how such individuals, unless they are particularly capable and succeed in making satisfactory adjustments in life through the possession of special abilities, tend to avoid and run away from the difficulties of a dull, prosaic,

uninteresting reality, or the routine of daily work, through the development of imaginary achievements and satisfactions. Marked introverts, unless they have secured some compensations through specialized abilities, had better not be employed as a general thing, though in some jobs such as "marking" they may show good production. Of course we know that many of our most skilled mechanics, best laboratory workers, and finest scholars are marked introverts. But here we have compensating factors of great saving value.

Extroversion does not present as clear cut a personality type as *introversion*. The extrovert lacks the symptoms of repression, oversensitiveness, unreality, protracted daydreaming, etc., exhibited by the introvert and represents more the normal, well-balanced, well-integrated personality. He makes contacts with people quickly and does not set up defensive attitudes nor respond with unintelligible bursts of emotion or inhibitions.

Both of these conditions, however, are subject to great modifications, and changes may be noted, through environmental influence, in the tendency to *introversion* or *extroversion*, particularly when one's circumstances change rapidly. Success, prosperity, and personal satisfaction tend to make the introvert more extroverted; while failure, disappointment, and chagrin produce in extroverts inferiorities and shut-in tendencies, sensitiveness, and defensive mechanisms. Extroverts make the best salespeople. Our own figures show that more than three-fourths of the good salespeople in Macy's store are readily classifiable as extroverts, while more than half of the poor salespeople are easily diagnosed as introverts.

Introverts who possess good clerical or mechanical ability, and do not suffer from very serious personal or home problems, may succeed well along clerical or mechanical or allied lines. In many of the non-sales groups we may well place carefully selected applicants with introverted trends if they do not show serious disorders of the personality.

Much may be said of the therapeutic effects of certain jobs in developing extroverted tendencies in introverts and thus adjusting them to reality. Cases could be given here to illustrate the results of our work in this direction.

We could continue along these lines and go on further into a detailed discussion of other personality classifications or characteristics of makeup, such as dominant personalities, submissive personalities, expansive types, reclusive types, emotional types, egocentric types, paranoid types, and inadequate types. Each one of these classifications includes a symptom complex that is peculiarly distinctive, and has certain bearings upon the clinical inquiry for employment.

The paranoid individual, for instance, with his suspicious nature, will not do well in team work, and no matter how much special ability he possesses is always liable to be a source of irritation and dissatisfaction in a closely organized group.

The egocentric personality, if marked, is very likely to be a "grabber," an individualist and a disciplinary problem.

The reclusive personality will certainly not do well in any type of work requiring contact with people; he avoids people, is shut-in, self-centered, and keeps his light hidden under a bushel.

The emotional personality is handicapped at work through his undue excitability or his marked moodiness trend.

The inadequate personality is often lazy, indolent, lacking in energy and "pep," and no matter whether he has good abilities or not, his production is always likely to be low.

It is well for the interviewer to be acquainted with the traits and characteristics comprising these classifications and he should read general psychiatric literature, so that he may become acquainted with the significant implications involved.

Of course, it is clear that we are referring to marked deviations from the average normal personality make-up when we classify a personality as being definitely "egocentric" or "paranoid" or "introverted," and the like. It is these extreme types which are in mind when we warn the interviewer against the problems they create.

Nervous and Mental Disorders. We have outlined, in our personality study, the need of evaluating the intelligence, the temperament and the volition, or motor characteristics, or will power of the applicant. We have also mentioned the desirability of considering the special traits of character that make for certain personality patterns, or types. We will now discuss briefly some pathological conditions that affect the personality and influence the applicant's success at work. It is not intended to cover all of the various forms of nervous and mental disorders, but simply some of the more common conditions with which the interviewer will come in contact.

Chronic Alcoholism. Suffused eyes, prominent superficial blood vessels of nose and cheek; flabby, bloated face; reddened aspect of the face, tremors of the fingers and of the tongue, tremulous hand-writing, etc.

Drug Addiction. Peculiar pallor of the skin; in opium users minutely contracted pupils, while in cocaine users widely dilated pupils.

Dementia Praecox. Indifference, withdrawal from reality, ideas of reference, and at times of persecution; inaccessibility, peculiar emotional flatness, eccentric posture and gait, an apparent gap between feeling and doing. The individual appears detached, odd, eccentric. There is often a lack of connectedness in conversation, though not always. Past history (school and work) and personal career will usually show erratic and irrational conduct. Of course, the more marked cases will complain of their thoughts being controlled by others; have marked delusions of persecution, hallucinations of hearing, and bodily hallucinations, frequently of sexual or electrical character; will exhibit meaningless smiles, and most inappropriate emotional reactions. Of course, all such cases need clinical or hospital care.

Manic Depressive Personalities. Mild depressions, (with or without feelings of inadequacy), fatiguability, talkativeness, marked overactivity, periods of exhilaration and expansiveness, marked restlessness, difficulty in holding attention on one task, etc. These individuals have periods of moodiness, "blues," inactivity and low work production, alternating with periods of great activity, restlessness, exhilaration, etc. They get "knocked out" by minor illnesses, have to do a great deal of resting up, need frequent vacations, etc. They often have good intelligence, and during their well periods may be dynamic, productive employees.

Psychopathic Personalities. There is a large group of individuals who cannot be classified as insane nor as feeble-minded, but who, nevertheless, are

incapable of behaving in a normal and acceptable way in the average environment. They usually have average or superior intelligence, and frequently have good ability, but they suffer from disorders of their personality that so seriously handicap their special talents as often to unfit them for much usefulness in society. They form the large body of the so-called "criminal class." They constitute the vagrant, the tramp, the unemployable group, and the periodic drunks. Their emotions are usually distorted and their life career is more nearly patterned on an instinctive basis than that of the ordinarily socialized adult.

The above classifications of paranoid personality, emotional personality, inadequate personality, egocentric personality, when exhibited in a marked degree, constitute what is called the psychopathic personality. In these cases there is a constitutional basis, ordinarily, for the mental life they exhibit. This may be either hereditary or acquired in early childhood. They are frequently very suave and make a good first impression.

The interviewer will notice in their work career and personal history the marked instability characteristic of these cases. Their employment is a risk, but if hired they require the closest, most painstaking and understanding follow-up.

Psychoneuroses. Hysteria, neurasthenia, psychasthenia, anxiety neuroses, and such states are functional rather than organic conditions that often have no objective signs and may thus escape notice. These individuals commonly suffer from hypochondriacal complaints, undue fatigability, marked "nervousness," inability to concentrate attention for any length of time, irritable weakness, pessimistic moods; they pay a great deal of attention to the function of their bodily organs, they have periods characterized by heart palpitation, difficulty in breathing, profuse perspiration, trembling, shaking, disturbances in appetite, dizziness, diarrhea, etc. Of course, not all of these symptoms are presented in any one patient, but the conditions from which these individuals suffer are mental in origin. They often can be adjusted under proper treatment, and are found frequently in perfectly good employees. But unless suitable treatment is instituted, these people sooner or later become serious personnel risks, and the disorders from which they suffer definitely lower their production ability. *Rest, sympathy, and medical treatment at the level of their physical complaints is just the thing they do not need.* These are all adjustment problems that must be dealt with as psychiatric cases. They had better not be employed to begin with, but when found among regular employees they should at once be referred to the psychiatrist.

Epilepsy. Epileptics are not easy to discern at the time of the interview. They frequently deny seizures altogether and in the history they often present nothing more than severe nightmares, dizzy spells, severe headaches, spells of weakness, etc. Their personalities are usually distinctly abnormal; they have violent and irritable spells, often over the most trivial causes. They have marked likes and dislikes, peculiar defects in memory, poor retention, and their behavior is unpredictable. They often have very difficult personalities and are egocentric in make-up. Their convulsive seizures render them a poor personnel risk.

Feeble-mindedness or Mental Deficiency. This condition is due to an arrest in mental development. The mind fails to grow commensurately with the body and there is a disproportion in the actual age and the mental age of the individual. They have the judgment, reasoning ability, learning capacity and understanding of children under eleven years of age. As a consequence they are unable to compete in life with the average normal man or woman. These mental defectives are best discovered through psychological

tests. They are often good workers and may make the most satisfactory employees if free from handicapping personality disorders and placed in a type of work specially suited to their limitations.

Individuals securing an intelligence quotient between 60 and 70 show borderline defective intelligence, while those under 60 have defective intelligence. Of course, this presupposes that the question of language difficulties in the case of the foreign born, and pathological conditions that produce mental deterioration or confusion or great distractability, etc., have been duly considered in drawing conclusions from the results of the psychological tests.

Need for Some Technical Knowledge on the Part of the Interviewer. All the above mental conditions are just mentioned in passing in the most summary fashion. The interviewer should carefully study such textbooks as White's "Outlines of Psychiatry," Henry's "Essentials of Psychiatry," White's "Foundations of Psychiatry," and other such psychiatric literature in order to get a more technical acquaintance with the symptomatology of nervous and mental conditions. No specifications or outline or guide can give him an adequate background for interpreting each case. This must be an outcome of his own growth, through reading, study and actual work.

Physical Condition. About 9 per cent of those examined physically for employment are rejected because of physical defects or disorders that make them unprofitable risks. Heart and blood vessel conditions lead the list, constituting about 26 per cent of rejections. Such conditions as diseased tonsils, hernia, very bad teeth, extremely defective vision or hearing, may cause rejection by the physical examiner. But there are a host of physical conditions that more or less modify the physical health or efficiency of the worker—nutritional disturbances, glandular disorders, flat feet, dysmenorrhea, kidney conditions, chronic rhinitis, sinus trouble, etc.

The common causes of illness, such as infections of the upper respiratory tract, indigestion, and functional disturbances of the nervous system, cannot be traced directly to defects that can be found by routine physical examinations.

Dr. Swan has shown, however:

... that a very definite relation exists between the physical condition of employees and absenteeism. Employees who need dental work, who have uncorrected errors of refraction, who are more than 15 per cent over or under weight, or who have some other defect that many people may consider unimportant, are sick more often, and therefore absent more than those who are in good physical condition.

Employees who have organic heart lesions, hernias, and serious defects are absent 42 per cent more than those in good physical condition. The relationship is largely indirect; the disability as a general rule not being the direct cause of the absence.

Suggested Outline for Personality Study. I. Facial Expression. Does the applicant look fearful, anxious, apprehensive, shy, timid, sad, gay, surly, hostile, suspicious, visionary, gullible, expressionless, intent, alert, eager, arrogant, cynical, fatigued, interested, indifferent, resistive, supercilious, etc.?

II. Movements. Are there movements of the head, of the face, of the body, of the hands, of the feet? Are there rhythmic quiverings of the mouth? Are there wrinklins of the forehead, peculiar facial expressions, peculiar

attitudes of the body, nervous twitchings of the hands, licking of the lips, biting of the nails, idling with pencils and paper, etc.

III. *General Observations.* Does the employee speak voluntarily to the interviewer of his own problems, interests, and ambitions? Does he talk freely and intelligently? Does he give a related story? Does he make a good first impression? Does he seem well-developed and well-nourished? Is his color good? Does he appear well-dressed and neat? Is he careful about his clothes? Does he make a good contact? Does he appear to be full of problems of an emotional nature? Does he seek a listener, and seem anxious to talk about his troubles? Does he appear self-centered? Does he crave sympathy, etc.?

IV. *Speech.* Is the voice well modulated, full, resonant, pleasing? Or is it pinched, small, strained? Or loud, harsh, irritating? Does he stammer, or slur words, or lisp, etc.?

V. *Mental Attitude toward Work.* Give details of the attitude shown by individual toward the jobs he has held in the past, and his reasons for leaving them; his eagerness to secure other work, how definitely decided he is on the present job under consideration; his attitude towards the nature of work it calls for; his vocational interests and work ambition, etc.

VI. *Mental Attitude toward Authority and Associates.* It is wise to make judgments of the applicant along these lines, inasmuch as the inability to take directions from those in charge, to work carefully under supervision, or to get along with one's associates is an important cause of resignations and lay-offs.

VII. *Mental Attitude toward Home Relationships.* Is there friction, worry, or difficulties of a psychological or financial nature at home? If so, how do they affect the individual, and his attitude towards them?

VIII. *Mental Attitude toward Himself and His Own Personal Make-up.* How does he feel about his own personal defects and disorders? Does he complain much? Does he overreact, taking the whole thing too seriously? Does he feel inferior, ashamed, shy, timid, or superior and well satisfied with himself, etc.? What is his attitude towards his own failures or achievements?

IX. *Psychoneurotic States.* Such people complain of undue fatigability or irritable weakness or inability to concentrate attention for a very long period of time, pessimistic moods, subjective disturbances of the nature of difficulty in breathing, profuse perspiration, trembling, shaking, disturbances in appetite, dizziness, diarrhea, etc. These cases pay more or less continuous attention to their bodily functions, their attitude being to no small extent fostered by the undue sympathy received, or by medical treatment at the physical level, which in many cases centers the patient's attention at his bodily functions.

X. *Psychotic States.*

XI. *Other Mental Conditions.* Peculiar ideas or feelings of uncertainty or doubts, memory defects and other undefinable miscellaneous conditions.

XII. *Recreation.*

XIII. *Summary of the personality traits or characteristics (having specifically in mind the qualities or traits suited to the job in question).*

Home Problems. It is important to know whether the individual lives at home or away from home; whether his family is partially dependent or totally dependent upon him. What is the nature of the home problems he has? One usually asks whether father or mother are living, or dead; in good health or poor health; divorced or separated, or living together; whether the father is employed, and if so, the nature of his employment. The same

for the mother. Number of brothers and sisters, their ages; number at work. Where the residence of family is, etc.

Is the applicant single or married? If married, how many children? What is the economic status? Are there home problems? If so, of what character?

It is obvious that difficulties in the home may influence seriously the mental life of the employee; bringing on depression or daydreaming; may affect his attendance or his production; may be the most important factor requiring him to stick at work, or the greatest cause of his resignation. A short outline of the home situation should be routinely taken.

Evaluation of the Psychological Study. From the point of view of measuring certain abilities involved in the performance of certain jobs, the psychological method of testing is in many respects superior to general observation, or to personal opinion, inasmuch as it is an objective, and thus a more accurate way of measuring behavior. It does not depend upon the subjective impressions of the examiner, which may vary from time to time in the same individual, and certainly will vary considerably with different examiners; also the results can be compared with those obtained in previous studies of the same individual, or of other individuals, and standards of achievement can be established.

Unfortunately, we cannot measure the total reactions and potentialities of the entire human personality, so that the method necessarily is limited in its value as a basis for prognosing the future adjustment of a given person. There are, however, some aspects of the total situation that are in a way measurable. What we popularly call general intelligence (or mental alertness), learning ability, speed, accuracy, motor dexterity, knowledge of arithmetic, etc., are subject to the experimental method of the laboratory, and the results achieved already in measuring these mental processes are usually quite superior to the generalizations of most examiners.

Consequently, psychological tests properly administered can become a tremendous aid to the well-trained interviewer, in helping him diagnose the abilities, the disabilities, and the adjustabilities of an applicant. They do not claim, however, more than they can actually accomplish. They can give an individual a score in motor dexterity, or in accuracy, or in speed of reaction, or in appropriateness of reaction, or in general intelligence, but these scores alone cannot tell whether an individual has it in him to make a good cashier, or a good marker, or a good clerical worker, or a good driver, etc. These are issues far more complex than the mere possession of abilities to perform the task required—issues that are only understood through a well-rounded, thoroughgoing clinical study of the total individual, the entire personality. This we have outlined in the foregoing pages.

It is through the utilization of the psychological test method as an adjunct to the interview that the applicant's potentialities can best be determined. But we will bear in mind that a high score in intelligence does not necessarily mean success at work, nor a low score in intelligence signify failure. We will want to know about the "drive" within the individual, his real interest in the proposed job, the make-up of his personality and its fitness for the work to be done, the physical health, the mental attitude, the work experience,

etc., in every given case. The individual may be rated "good" in all special ability tests, and make a tremendous failure on the job because of the personality trends and difficulties that handicap him. He may be rated only "fair" in certain ability tests, and yet have the tenacity, industry, and ambition that ultimately win.

In our own work, psychological tests play a definite and sometimes important part. They are used as clinical aids to bring out certain reactions and tendencies that our job analysis and job specification study have indicated to be factors of considerable importance in performing the task. But we do not ask, or expect more of them than they are intended to give.

It can be seen from our previous remarks that there can be no greater fallacy than to put the interview on one side, and the laboratory method of measurement on the other, as though they are to be considered opposing methods of approach to the evaluation of the same factors in the mental and physical make-up of the applicant. They must be viewed as two different aspects of the same examination—the qualitative and quantitative viewpoints. Certain phases of the study can be gotten best through a qualitative or clinical inquiry; while other aspects may be measured quantitatively. They go together to make a whole, and the employment technique, as we see it, is not complete without both.

Our own procedure at Macy's provides for giving to each job certain criteria and setting certain standards in the way of intelligence or accuracy, knowledge of arithmetic, speed, etc., which we expect to be met by applicants seeking employment. Our job specifications, which are in the hands of each interviewer, indicate the ratings set for each one of these items.

The following criteria for cashiers will illustrate this point:

Cashiers' Criteria

1. **Ages.** From seventeen to twenty-five are the best, preferably between twenty and twenty-five, except part-time married women, who may be between twenty-five and thirty. Young married women do better in part-time work than single girls.

2. **Schooling.** Grammar-school graduates are required. The farther up or down the scale, the greater frequency of problems.

3. **Personality.** Good attitude is essential. Those suffering from serious conflicts, the so-called "nervous types"; those with emotional maladjustments, wrong mental attitudes, and seriously faulty ways of meeting their problems; those who daydream or indulge unduly in mental reverie, particularly of a pessimistic nature, are liable to make errors and be slow in their transactions as cashiers. The well-integrated, well-focused, objective types who are alert, vigorous, and free from too much introspection; those who can develop a high degree of organic tension and maintain it constantly during work make the best cashiers.

4. **Physical Conditions.** Vigorous, healthy girls, neither too fat nor too thin, free from any debilitating conditions or tendency to fatigue, with good muscular development, make the best physical types. The condition of the eyes as to vision and muscular balance is essential to consider. Also any condition of hands, wrists or arms, that may handicap or limit freedom of movement and motor dexterity, must be looked into.

5. **Home Conditions.** Serious home conditions, particularly serious illness or domestic difficulties other than financial, are apt to produce what is called daydreaming and error-making.

6. Intelligence. Intelligence quotients between 90 and 110 produce the largest proportion of satisfactory cashiers. I should not take any with an I. Q. under 80 unless the job tests and the rest of the study indicate well-developed specialized ability, and I would scrutinize carefully those over 110, as the latter are apt to become dissatisfied with the opportunities for advancement. Still, the social status is an important consideration, as many bright girls come from homes where a cashiering job would be quite an acceptable social achievement.

7. Speed. Those marked "poor" in speed should always be turned down, no matter what the other findings are. Either "good" or "fair" speed may be acceptable.

8. Accuracy. Do not accept any one marked "poor" or even "fair" in accuracy. Demand "good" for a rating. Otherwise, error-makers will get in.

9. Learning. Either "good" or "fair" is acceptable.

10. Arithmetic. Either "good" or "fair" is acceptable. Turn down those marked "poor."

11. Motor Dexterity. Preferably those rated "good."

Of course, the final interpretation of all findings becomes an individual matter, for which fixed and written standards cannot be set, and numerical ratings of the entire study not adaptable.

The above is the kind of an outline that the interviewer is to have in mind as a mold into which she seeks to fit the applicant for the job of cashier. We have developed the same sort of standards and specifications for other jobs within the store.

Summing up the Data as a Basis for Diagnosis. It may be seen from the foregoing outline of methods which should be employed in conducting the examination of an applicant for a job, that a fairly careful and well-thought-out technique is desirable, if we are going to evaluate the really important factors involved in the individual's success as an employee.

The interviewer's genius in selecting the right sort of people will frankly depend upon his ability to sense the important issues, as he brings together the various facts gleaned from the personal history, the personality study, the home inquiry, and the psychological examination, into his brief and clear summary of the case. Sound judgments and accurate predictions cannot be accomplished in the twinkling of an eye. A routine systematic procedure that involves a critical inquiry into every phase of the whole examination, and a thoughtful balancing of every factor that goes to make up the final picture of the total individual, develops in the interviewer what may be called a diagnostic acumen.

He is concerned fundamentally with making a prognosis in the case of each applicant. His own mental attitude is quite important, and essentially different from that which he assumes to the individual he has already employed and is following up in his effort to adjust to the job. In the former instance, he must remove himself from any emotional attachment that may interfere with his judgment; while in the latter instance, he may well allow sympathy and personal interest to play a part, as they sometimes will drive him to harder work, in preventing or overcoming maladjustments that lead to resignations or lay-off.

Of course, his ability to group together all the important facts or symptoms and make a diagnosis will depend upon his knowledge of human behavior in its abnormal, as well as normal, aspects and his experience in applying such information in connection with actual work situations. In the final analysis, he shows his genius in the ability demonstrated in summing up and evaluating the data he has obtained.

Follow-up on New Employees. The follow-up and adjustment end of employment work becomes, to our mind, probably the most fundamental phase of the interviewer's work. The lack of a routine, systematic, and well-planned follow-up program is, in our opinion, one of the greatest shortcomings in present day employment technique.

Securing people who are potentially "fairly good" is not a seriously difficult task in employment technique. But developing and adjusting them, and finally retaining them, is another matter. Here is a responsibility that is distinctly a concern of the Employment Department.

Many issues that bring about work and personality maladjustments are already present, and must necessarily be present at the time of hiring. For we have made quite clear the impossibility of our ever being able to secure what may be classed as absolutely good material for every job; there is not enough to go around. The great majority of our new employees will in the final analysis have to be rated as only fair material; a small proportion will be distinctly good high-grade stuff. Our interviewers will recognize and fully assess these matters, and in their close follow-up will bear in mind the adaptabilities and disabilities of each individual, and the potentialities for failure that may lurk in many a fairly promising employee. They will understand these matters and seek to deal adequately and effectively with each case, in order to forestall resignations, drops, and lay-offs. For this is the road to the reduction of turnover—not through dependence alone upon correct selection at the time of employment. This is a prevention program, in which the reduction of work failures is largely brought about through an intensive follow-up and adjustment régime, immediately following upon employment and placement. This is a program that requires a change of emphasis from a hypothetically perfect hiring technique in selecting just exactly the right person for each job, into a developing and adjusting technique of improving human individuals and making them of greater value to themselves, their employers, and the community in which they live. This is much cheaper and certainly more profitable from a human viewpoint than the simple hiring and firing policy so commonly in use.

Upon whose shoulders shall fall the responsibility for this follow-up program? It is our belief that the interviewer, who has originally diagnosed the work potentialities in each case, who has gone over every phase of the applicant's qualifications and disqualifications for the job in question, and who understands the peculiar personnel problems presented by each personality he has employed, is the one person best equipped to follow up each new employee intelligently with a view to work adjustment. His knowledge, secured at the time of employment relating to individual and personal factors involved in work adjustment that may lead to success or

failure, will enable him to anticipate maladjustments, to detect early difficulties and often prevent actual separation of the individual from the job.

It must not be thought, however, that the interviewer will have either the time or the equipment to make an adequate psychiatric analysis and undertake anything like satisfactory treatment work on problem cases, particularly those of the more complex types.

People will become mentally ill under stressful situations despite the fact that they have in the past been usually well adjusted. Personality difficulties, loss of interest (due to serious mental conflicts), anxiety states, irrational reveries, etc., will develop in people who previously had never presented such problems.

The value of our technique, here discussed, is not in its provision for the interviewer to handle these more serious disorders of the personality and endeavor to treat them, or just to recognize them and have the individuals laid off as is now so commonly done, but to see the significant treatment possibilities in each case, to detect such types of cases throughout the organization. Much in the way of actual psychiatric treatment and prevention may be accomplished by early reference to the psychiatrist for well-rounded study and treatment.

All of our work proves that, through catching these maladjustments early in the employee's store career, and setting in motion the type of adjustment machinery with which we are now equipped, we will cut down enormously on our turnover problems, and will raise the production capacity of otherwise potentially problem cases.

It is important that we get a clear understanding of the real values that are to ensue from a properly organized follow-up system. These values are not to be seen alone in the adjustment of the new employee, for the interviewer himself becomes the greatest beneficiary. It becomes possible now for the first time to see his diagnostic ability directly put into practice. For now he is able to witness the results of his initial judgments and secure a self-criticism on his diagnostic technique.

There can be no growth in diagnosing the work adjustment and possibilities of applicants, unless the diagnostician has a chance to check up on his errors and mistakes, and unless he is able to secure a continually better insight into the problems furnished by the job environments for which he is employing. This self-criticism and technique analysis, plus the additional information about the department and its needs, will always furnish the interviewer a fresh and growing approach to his problem, and tend to make his work more professional.

Record Keeping. Good records must become the heart of our case work. There is no real growth without orderly, systematic, and well-kept records on each and every case. That the interviewer should have some well-planned method of recording certain detailed information about each individual he employs—what are the outstanding problems and what happens to them—if he is really to do effective work is simply to elaborate the obvious.

It is desirable that the method adopted be as simple and as free from unnecessary details as possible. It is out of the question to go into the case from the same thoroughgoing angle that the psychiatrist has to employ

in unraveling problem cases and thus to keep a detailed case record on each case for purposes of research work into the causes of maladjustments.

The nature of the record employed by the interviewer is to be thought of more as a simple card on which certain essential data that will guide him concerning his case will be placed.

When an applicant is employed, the findings in the particular case, including the psychological data and all of the essential facts obtained in the clinical interview, should be recorded in a few words on the "record card" that is to be kept by the interviewer on his own desk. Also he should record on this card all of his follow-up data on the individual. He should also keep a loose-leaf notebook in which he will write in more detail the information he secures in his follow-up work on the case, so as to guide him during his period of contact with the new employee. This information, naturally, cannot be placed on the record card, except in a most symbolic or abbreviated form.

On the first line of the card is placed the new employee's name, department disk, and date employed. Then on the left-hand side of the card the psychological and clinical interview data, such as I. Q., speed, accuracy, arithmetic, motor dexterity, filing, and whatever tests may be used for the particular job in question; then the age, schooling, work, personality, home, and other information, as well as outstanding health problems or physical handicaps, etc.

The follow-up data is placed on the back of the card. This should include brief mention of the dates of his own follow-up together with reference to any very outstanding information. It is important that he secure information from the divisional teacher in the training department as to the results of training, and in fact start his follow-up with this information which he secures from the training department.

The follow-up should be regular and systematic and should continue uninterruptedly until the interviewer is sure of the adjustment of his case.

A suggested arrangement for a record card is given on page 1099.

Periodic Analysis of Work. At least once every six months there should be a careful stock taking, a statistical evaluation of the work done, a rigid scrutiny of the results achieved.

Every single case should be gone into and the final status determined. It should be the purpose of the interviewer to analyze thoughtfully the material in terms of each individual employed, as well as the entire group from a statistical viewpoint. He would then be able to understand clearly and interpret significant trends, bring out the weaknesses in his methods, and profit by the mistakes he has made.

There is no other means of growth more satisfactory than that obtained through a periodic analysis of one's own work.

Conclusions. We have in the preceding pages given a very brief outline of a guide for the employment interviewer, based upon well-tried methods of studying human behavior.

We have suggested an employment procedure that is fundamentally clinical in nature and that seeks through an application of medical, psychological, psychiatric, and social technique, to discover and evaluate the essential factors underlying the individual's life adjustments, to prognose

his work potentialities and to improve his ways of meeting job and other life situations.

Name		Nationality	Date employed	Salary	Department
Date of birth	Height	Education			
Work history			Appearance		
Health problems					
Home and living conditions		Job interest	Tests		
		Rating G F P <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>			
Personality: Alert. Responsive. Convincing. Aggressive. Self-expressive.		Self-confident. Self-conscious. Nervous. Contacts. Stability. Reality.		Insight. Integration. Ambition. Poise. Patience. Attitude.	

It is out of the question to hope that in any mere brief discussion of this nature we can do more than call attention to fields of knowledge that should be carefully investigated by the employment interviewer in his search for information and training. He should read assiduously and study thoroughly the psychiatric literature. He should constantly grow through the close check-up and evaluation of his own work.

It is not to be expected that he will come into the possession of wisdom any differently from the slow and laborious methods pursued by all students who have to practice their art in order profitably to learn.

ETHICS AND METHODS IN HANDLING REFERENCES

By EARL B. MORGAN, *Consulting Engineer*

Definition. An employment reference is a statement of facts given upon request by a previous employer and should be based on the employment record of the subject, covering such items as period of service, occupation, wage, reason for leaving, rating on workmanship, attendance, and conduct.

It may not include all these items, but it should if they are all a matter of record, except possibly the wage when it is against the employer's policy to disclose it. It should not, however, include and should not be expected to include a forecast or prophecy as to how a subject's character and workmanship will fit a given set of requirements generally unknown to the informant. It should simply be a rating of past performance.

A personal reference is an opinion given upon request by a person named by the subject as being qualified to give it, covering character, integrity, general standing in the community, and should be based on either social or business acquaintance, or both.

These references should, if possible, be followed up before the applicant is engaged so that the information obtained can serve as one of the factors entering into the determination of the applicant's fitness for the position. This is not always possible with lower rank employees, especially when the labor market is tight and competition is keen. Such applicants will not wait until their references are checked; the only way to handle them is to maintain a waiting list, if the supply permits, and look them up as they are placed on the list. Otherwise, they must be employed relying upon judgment based on the information obtained through the interview, and then follow up the references as a check.

Form of Request. It is a common practice of employers to request an employment reference by sending a printed form drawn up in questionnaire style. Such practice, no doubt, effects a saving in the office routine of the inquirer, but it presents practical difficulties for the employer to whom it is directed. First, if the answers to the questions are typed, it is difficult to register to the spacing provided on the form; in fact, a typist can write a regular letter giving the desired information with less inconvenience. Second, if the form is used in answering the informant has no record for his files.

Those who use a printed or prepared form can prevent the first difficulty by providing blank space, say at the bottom, where a statement can be either typed or written in longhand. Obviously, the employer who wishes to keep a record always has the opportunity to do so by answering the request with a letter and retaining a copy, or making a carbon of the memorandum which is typed on the form.

A good way to make the request of a previous employer is a personal letter along the lines of the following:

John Doe, 100 E. Second St., Philadelphia, has applied to us for employment and refers to your company for his employment record as a machinist under Mr. Black, at \$42 per week, from January, 1921, to December, 1923, when he resigned for another position.

We shall appreciate and treat this information confidentially.

Such a request not only states clearly and briefly just what is wanted but also facilitates answering. It identifies the applicant; it states the essential points of the employment record as claimed by the applicant which can be readily verified and supplemented with a rating on workmanship, conduct and attendance. The data requested are sufficient to serve the inquirer's purpose. The option is offered of replying by memorandum on the letterhead or by

letter; it can readily be expanded to fit any unusual case or circumstance that may develop in any particular problem of selection.

There is no question but that the personal letter encourages more personal attention and care on the part of the informant than a printed form. It costs little, if any, more than a form and the increase is justified by the results in obtaining better information. Experience has demonstrated that there is a vast difference in the quality of replies between the questionnaire and the personal letter, favoring the latter.

In requesting personal references, a personal letter like the following can be readily expanded to cover special cases:

Mary E. Jones, 2310 N. 21st Street, Philadelphia, has applied to us for employment and refers to you regarding her character.

We shall appreciate your confidential opinion.

There are several grades of personal references with respect to their value in determining qualification for employment. There is the person whose name is furnished upon request by the applicant; it is often one who has no business or social standing and frequently only has a meager acquaintance with the applicant, so that such a source produces information of little value. Simply a name without any identity is valueless as a personal reference. The worth of anyone's opinion regarding an applicant's character and integrity after all depends upon his own character and integrity. Each person's rating is a relative matter, it depends upon the standard which he has in his own mind; so that after a rating is secured the problem remains of rating the person who gave the rating.

An applicant may be asked to give the name of a professional man such as a physician or lawyer, and even better a clergyman, or a man with whom he is personally acquainted who holds a position of responsibility in some reputable business, social, or political organization. Such persons, as a rule, have some sense of responsibility and are governed by a code of ethics which influences them not to give false endorsements or "glad hand" recommendations which would jeopardize their own standing.

Two Main Elements of a Reference. The two main elements of a reference are workmanship and character. Before proceeding with the reference checkings, it should be determined which of these should have the most weight.

For instance, in employing a field manager, whose work is to be mainly with schools, parents and children, *character* is the all important factor; previous business experience in workmanship is secondary. So the investigation is focused on character and this is given major consideration in the final decision. The net of this point is to decide what is the salient factor in the past record, then focus on it, not just to investigate aimlessly.

In attempting to evaluate a reference the source is important. An employment reference that confirms the period of employment and gives a satisfactory rating on workmanship and character from a concern that has a reputation for requiring high standards of workmanship and character should exert a deciding influence in the applicant's favor; likewise with a personal reference

that gives a clean bill of health on character and integrity from a person of some standing in the business world, such as a reputable banker.

As to the value of references, one thing alone has proven worth while in checking up previous employment records and that is: Misrepresentation is often disclosed, thus giving a lead to a weakness of character that would otherwise slip by.

When there is an apparent inconsistency between the claimed period of employment and the reference record the condition must be weighed on its merits, keeping in mind that common labor, and to some extent skilled labor, has a hazy recollection of time, dates and names. It does not reflect necessarily if there is an error made.

How much information should the inquirer expect, and how much should the employer answering feel obliged to give? A simple statement of the employment record is sufficient and, except in the case of high grade executives or salesmen, or in unusual cases where there is extraordinary responsibility involved, that is all that should be expected as a background to assist in judging the applicant's qualifications. The term employment record includes:

Period of service.

Occupation.

Wage.

Reason for leaving.

Rating on workmanship, attendance, and such personal qualifications as compatibility, loyalty, responsiveness to discipline and training.

After all, each employer must do his own judging of applicants and should not expect a former employer to do it for him. Simply because a man exhibits certain qualities and certain shortcomings in one organization is no indication that he will do likewise in another organization of different environment. Furthermore, just because a man does not work out satisfactorily does not mean that the good references which were obtained on him were off color.

Some employers, apparently, do not care to impart information about wage rates. If an employer holds back information about wage rates in answering a reference request, he is taking the best course to encourage false representation of wages by applicants. In other words, it is to the mutual interest of all employers to encourage a free exchange of information on wage rates.

When an employer receives a reference request from an inquirer with whom he is acquainted, when he knows that the information will be treated confidentially and how it is going to be interpreted and used, it is one thing; but if he has no idea as to how much or what kind of influence the information will have on the inquirer's final judgment, it is another. In the first instance, he can feel more free to go a little more into detail, perhaps to the extent of commenting on undesirable qualifications especially when he knows that the inquirer is broadminded enough to give the information the proper weight.

When an employer receives a request for a reference on an ex-employee he is immediately confronted with a twofold obligation; first, to his former

employee, to do all that circumstances justify to assist him in getting employment or such privilege as he is seeking, provided that it will be advantageous to him—it would hardly be a benefit to assist him into a position which he could not possibly fill. Second, as employer to employer, he will readily practice the golden rule if he will just reverse conditions and place himself in the inquirer's position.

Reference information should not be used as a "black list" by combinations of employers or otherwise which would work against the inalienable right of a man to the opportunity to earn a living. It is not uncommon to hear it said that such-and-such an employer will "blackball" a man if he leaves.

Unfavorable Data. When an unfavorable bit of information is secured the matter is not simply dropped and the applicant disqualified. Every effort is then extended to help the applicant clear up the matter. A man claimed five years' employment with a local reputable concern but their reference refuted his claim. The man was again interviewed and persisted in his claims and offered to call personally on his foreman and get a statement bearing out his claimed employment. He got the statement and it developed that a clerical error was responsible for the unfavorable reference. Frequently it is impossible to get any check-up on previous employers, especially in cases of casual employment. Then one must depend more on the character references and often supplement these with a personal investigation.

An ex-employee will sometimes ask a former employer if he has been referred to and what kind of a reference has been given when he has failed to land a particular job, and he may harbor a feeling that his former employer prevented him from getting it by giving a poor reference. In such cases it is helpful to have a copy of the reference which has been given to show to the ex-employee. There is no better way than this to clear up his reservations and maintain good will.

This brings up the importance of employers who ask for references keeping the information absolutely confidential. Many have had experiences where confidence was violated and the employer who so errs rarely gets the same brand of frank answers in the future.

Requests about Active Employees. Frequently an employer receives a reference request about one of his active employees. This is, unfortunately, embarrassing to both employer and employee. The employer forms the impression that the employee is dissatisfied and looking for a change, and the man's standing is weakened. The inquirer, as a rule, has no intention of jeopardizing the employee's relations with his employer and has made the request innocently thinking that the employee had left.

Some employers attempt to answer these requests in such a way as to prevent the inquiring employer from employing the subject, considering such a request as evidence that the inquirer is "stealing" his help. It would seem the mere fact that the employer is requesting a reference is, of itself, evidence to the contrary. Obviously if the motive were help stealing no such request would be made, as it would disclose the move. So when such a request is received, it should be answered by courteously informing the inquirer that so-and-so is still employed, is rendering satisfactory services, and is, apparently, satisfied.

Another way of looking at such requests is that they are valuable information; they indicate weak spots in the organization. If an employee is job hunting—and reference requests are undoubtedly evidence of it—he is due to cause turnover sooner or later, and the quicker this is found out the better for all concerned.

In merchandising it has long since proved poor selling to knock your competitor, and this policy applies to competition for labor. The employer is broadminded indeed who can, when one of his employees has an offer of a better job, part company saying, "We are sorry we can't offer you an equal one; good luck; if it does not work out, call and see us."

When a person is being interviewed for future prospects rather than an existing opening, the employer should be careful to ascertain whether everything is clear to look up references, before proceeding to the embarrassment of the applicant. Some applicants rightly object to any check-up prior to consideration for a definite opening.

References over the Telephone. Many concerns request references over the telephone. While this practice, no doubt, serves to expedite proceedings, there are several drawbacks. There is no assurance as to the identity of the inquirer, and while there could hardly be any objections to giving out the record of an ex-employee who was entirely satisfactory, there is a decided objection to giving out a bad record unless the identity of the inquirer is definitely established. When a telephone inquiry is received, if the inquirer cannot be identified and if the record of the employee is not thoroughly satisfactory, a good method of handling the case is to invite the inquirer to put his request in writing. There may be cases where an employer has information on an ex-employee which is of such nature that he would not care to put it in writing but would willingly pass it on by word of mouth if he were sure of the identity of the person with whom he was talking. Another objection to telephone requests is that unless the inquirer confirms his inquiry in writing, the person to whom the inquiry is directed has no record of the proceedings. In all cases the request should be confirmed by the inquirer, so that both parties may have a record of the transaction.

The Personal Visit. If a reference is particularly important, as with positions of unusual responsibility, and if the distance is not prohibitive, the most effective method is the personal visit. Employers who are reserved in their answers to written reference requests will be more inclined to "loosen up" when the information is sought through an interview, especially when the person who is calling is able to command confidence. Some employers make it a custom in seeking references of local employers to send a messenger with a form request. This accomplishes nothing except speeding up in comparison to mailing.

Letters of Reference. Many concerns give employees, when leaving, a letter of reference addressed "to whom it may concern." It is better when an employee leaves to advise him that one stands ready to write a letter to whomsoever may inquire, or to give him if he wishes, a simple written statement of his employment record, a pure reference without any recommendation. The first method seems preferable, because it saves the employer embarrassment with a poor record and he has more leeway to comment on the person in question if he so desires.

Use of Investigating Agency. An employee's record can be checked up through an investigating agency. A good agency can make an investigation bearing on standing in the community by calling on and interviewing acquaintances and stores in the neighborhood where the subject lives that will prove worth while information. But such an agency cannot obtain information from previous employers nearly so well as the employer can himself. Some employees will resent—not without reason—having an investigation made through some secret agency, but will hold no brief against an open follow-up by a prospective employer.

Requests for Credit Recommendations. Many merchandisers who extend credit and time payment privileges are in a habit of requesting credit recommendations on employees and ex-employees. With the recent growth of this type of merchandising these requests are on the constant increase in number. They are rather difficult for the average employer to handle. As a general rule, he is not qualified to judge whether his employee is or is not a good credit risk, as he is practically limited in his knowledge to the record of employment, which should be ample information for the credit investigator to expect from such a source.

Employees' Addresses. Most employers obtain their employees' addresses by requesting them on the application at the time of employment, frequently agreeing to treat the information confidentially. In such cases the course in answering requests for addresses is perfectly clear. But if this has not been so agreed, the best practice would seem to be: Before answering the request, consult with the employee to see whether he sanctions giving out his address, as it is obvious from the various purposes mentioned above that the information may fall into someone's hands to the employee's inconvenience or embarrassment. Some concerns avoid difficulties by answering address requests with this statement: "Employees furnish us their addresses and similar personal data with the understanding that we will treat them confidentially; therefore, we regret that we cannot comply with your request."

Legal Responsibility. It might be well to consider briefly the legal responsibility in connection with giving out information regarding an employee or ex-employee, and it would be advisable for each employer to seek legal advice so that his practice will not lead him into legal difficulties. It is hardly possible in a general way to cover this as the matter depends upon varying state laws.

This is how one legal mind views the matter:

Truth of the statements made is always an absolute defense to an action for libel. Further, even if the information furnished be untrue, the occasion may be privileged, which will likewise constitute a defense. When one is called upon to supply data in regard to a person who has formerly been in his employ and is about to be engaged by another employer who has requested the information, this constitutes a privileged occasion.

The foregoing is an accurate account of the theory of the matter. As a practical proposition, however, it must be remembered that the jury is the final arbiter of all facts and, therefore, one always runs the risk of failing to establish to the jury's satisfaction a defense of truth or privilege, no matter how plain the same may be. For this reason it is safe policy to require, as a condition precedent to furnishing any information, a release from the

employee in a form similar to the following, which effectually protects the person or corporation from all liability in the matter:

I request that you furnish to..... a full

Name and title	Address
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transcript of my record as an employee; hereby agreeing that same is furnished at my request and for my benefit, and expressly covenanting that nothing contained in said record (if anything) derogatory to my character or service, nor the furnishing of the transcript of the record, shall be in anywise excepted to or complained of by me, and that the said Company shall be in nowise answerable or liable to me on account of anything therein contained.

Another legal viewpoint is that the release is entirely unnecessary because an employee gives permission by implication through the very act of referring to a party voluntarily upon his application. It is sufficient defense against libel to prove that the information was given upon such a request and without malicious intent; the real danger is volunteering the information with malicious intent.

PLACING AND INTRODUCING EMPLOYEES

BY EARL B. MORGAN, *Consulting Engineer*

A great deal depends upon the manner and spirit underlying the way the introduction of the new employee is handled. It is hard to overcome bad first impressions even though subsequent developments show them to be unfounded. It costs little or nothing to put this principle into practice and it bears beneficial results. With a new employee, careful attention is required over the probationary period. This point becomes obvious when you refer to the turnover records of the average organization which generally illustrate the fact that the greatest turnover occurs during the first three months of the worker's service. Some concerns seem to think this principle of courteous and considerate treatment is applicable only to the higher grade help but experience has shown that the lowest grade help is just as susceptible to its influence.

Instruction. After the selection has been made the first thing in order is to see that the new employee is thoroughly instructed as to when and where to report for work. This, perhaps, can be best handled by the interviewer who selected the employee. If the manager (or foreman, that is to be in direct charge) has already covered his instruction during his interview with the employee, then what the interviewer does along these lines will serve to emphasize the facts and make sure there are no misunderstandings. It must be remembered that instructions to the new employee cannot be made too plain because the strange environment, meeting so many new people, and the process of employing itself, all tend to set the stage for misunderstandings which cause many to fail to report on schedule.

Particular care should be exercised to be sure that the newly selected employee understands clearly the terms under which he is to be employed.

These matters, of course, have been previously defined during the process of selection, that is, during the interview. But the average employee, when seeking a job, is a little nervous and this seems to make it very easy for him to get a mistaken idea about the terms of employment, and experience has demonstrated that later on no amount of explanation or proof by written record will satisfactorily convince the employee that he is being fairly treated; so there should be, at this time, a final confirmation, preferably by the interviewer who selected the employee, of the amount of wage for both regular time and overtime, also the hours.

A good method of insuring a clear understanding of the terms of employment is to have the employee sign a written statement of them which can be conveniently kept on the application or personnel record card.

During the process of selection it is, of course, important to explain the opportunities for salary increases and promotions but it is well during the instruction step of the placement process to take particular care that this is reviewed, because misunderstandings often occur which lead the applicant to think that these statements are promises. Whenever a definite promise is made, it should be written immediately on the employee's record and noted on a "tickler" so that it will not be overlooked when the date due comes around. To fall down on such a promise may seem like a very insignificant thing but it will quickly destroy the employee's confidence in the employer.

Information about the Company. The next step in instructing the employee is to inform him about the company, its business, its scheme of organization, its policies, its rules and regulations. In short, the new employee should be told what will be expected of him and in turn what he may expect of the company. There are two ways of accomplishing this—either by the oral method or by giving the employee a printed pamphlet or booklet. It is rather difficult in large concerns to take the time of both the interviewer and the employee to explain the many features that necessarily should be covered and the printed pamphlet or booklet is perhaps the best medium. If this information is distributed in printed form, it should be written in brief, clear and concise language. Printed forms can be made up in attractive pamphlets, such as a memorandum book, and illustrations are helpful. It must be kept in mind that the new employee is more or less nervous and in a confused state of mind due to the new surroundings and all that he is told during the first few hours of his employment usually produces rather hazy results, so at least for those who can read the printed pamphlet, that form seems to be the safest and most practicable method for large concerns.

Modern employment office practice dictates the necessity of keeping complete and correct personnel records for each employee. All information necessary for this purpose in the case of the new employee should be obtained in correct form at this time. Errors in spelling the name, incorrect address, and errors and omissions in the personal data can be corrected if these items are checked up before proceeding further. If a photograph is included in the record, or used as a method of identification, it should be taken at this time. A practice that seems to have merit is this: After a new employee is placed, mail to his home with a personal letter of welcome a copy of the firm's employees' magazine or paper.

Introduction. Up to this point everything should have been cleared up so far as possible so that when the new employee reports for actual work, there will be no interruptions necessary to take care of matters of detail.

If during the process of selection the new employee has been introduced to and interviewed by the manager, it will not be necessary for him to be personally introduced when he reports for work. If, however, the process of selection does not offer this opportunity, then there must be some method of introducing the employee to the manager when he actually reports. Any of the following methods are good and the one to be used simply depends upon the prevailing conditions: The interviewer personally conducts the new employee to the department; the new employee is sent by messenger who personally introduces him; the new employee is sent by messenger with a card of introduction; or the manager goes to the employment office to meet the new employee.

At this time the new employee should be shown by someone, preferably by the manager or at least one of his immediate assistants, all facilities for the personal comfort of the employee such as the lunch room, rest room, library, locker rooms, toilets, washrooms, drinking fountains, exits, fire escapes, and the method of keeping the record of attendance—time clock, and similar matters.

When the new employee actually reports in his department to go to work, he should receive immediate attention from the manager, the instructor, or whoever is to take care of him and not be compelled to wait as this often leaves the employee with a bad impression, makes him feel that no interest is being taken in him and tends to discourage him.

Some concerns have adopted the practice of taking the new employee on a trip through the plant during the first few days of employment, others have the plan of giving group talks to new employees on company policies. Both plans probably have their merits in certain situations, but before deciding upon such a plan it should be remembered that the new employee is generally confused when he starts to work and trips through the plant and talks are liable to add to his confusion rather than assist him. These plans are more or less expensive, involving a great deal of time and money, and it is questionable whether they pay their way. In general, the more quickly an employee is settled in his job, the more quickly he can gain self-confidence and get over that "first day at school" feeling; then perhaps after he is settled, a trip through the plant would be more beneficial.

Reception Committee. The idea of having a reception committee to get the new employee started on the right track seems to be used to some degree of success in various organizations. This plan is generally worked out by having a representative in each department to act as "sponsor" for the new employee during the first few days—introducing him to the fellow workers and the environment. This plan undoubtedly has some advantages, but like all other personnel practices, it should be weighed as to its fitness under the given conditions before it is adopted. There is some danger that certain types of employees would feel an undue paternal influence if someone was detailed "to be a big brother" to them. Then there is this to consider, should it not be the manager's or foreman's job, and does he not owe the employee

this much interest and attention? And by giving it, would he not cement relations right at the start?

Where a large number of girls are employed, it is quite necessary to have some person, particularly if there is a male supervisor, to whom the girls can go with certain problems which they would not be free to discuss with a male manager. This situation is often met by having a woman in charge of a so-called service division who is ready to help girls in such situations.

Follow-up. In order to round out a well planned and well executed program of selection and placement it is essential to check up on the success of the selection as soon as the employee has had an opportunity to demonstrate whether he has the necessary qualifications to fit the requirements. The period of service necessary to demonstrate fitness varies for different positions but in most cases one month at the most should furnish sufficient time. However, the check-up should be made as soon as possible so as not to allow an employee with inadequate qualifications to linger on the job longer than is necessary. A poor selection only ceases to be a liability when replaced by one who is qualified.

There are several ways of going about this matter of follow-up of new employees:

1. The interviewer personally investigates and interviews the new employee on the job. He is thus afforded an opportunity through personal contact with the interviewer who selected him, to tell about any unsatisfactory conditions which may have developed, and also that the new employee is impressed with the fact that the interviewer has a personal interest in him.

2. The new employee is asked to call at the employment office for interview.

3. The interviewer discusses the progress of the new employee with the foreman only, because it is felt that the interviewer may otherwise be considered by the foreman as meddling with the foreman's authority and weakening it, and furthermore, that the interviewer will become involved in trivial grievances of the employee that would otherwise never come up.

As to there being a chance of creating a feeling in the foreman's mind that there is someone attempting to come between him and his men, this may seem a rather trivial matter but the employee frequently thinks that the employment interviewer is the person to whom he must turn rather than his own foreman after an investigation by the interviewer. Of course, the new employee should be assured that the interviewer will be glad to see him at any time in the future if he wants advice or assistance, but in handling such cases the interviewer should be very careful that the foreman is fully advised of what is going on.

4. Some advocate that the interviewer follow up the new employee's progress with both the new employee and the employee's foreman or manager in order to get both viewpoints. The advocates of this plan claim that both sides of the case are necessary in order to thoroughly size up the situation.

Whether or not the new employee is to be approached in the follow-up investigation, there seems to be no argument against the statement that the foreman, or manager, should be. If, for no other reason, it makes him appreciate that the interviewer is trying to cooperate with him in obtaining the best possible personnel and tends to bring them both closer together.

5. The interviewer does not make a personal investigation by interviewing either the foreman or the employee but relies upon a written report or rating from the foreman. This method is felt to be rather "cold" and devoid

of any stage setting or environment of the job, and does not afford personal contact. The interviewer's job information is strengthened if he goes right out on the ground and sizes up the situation himself. If he does this, then any written report which is submitted would seem to be strengthened.

One point is often overlooked by those who have perhaps become over-enthusiastic about system, in particular a few writers who advocate employment plans and policies which are nice in theory—and that is the matter popularly known as “red tape.” There are some employment offices particularly in large concerns where a new employee has to go through such an extensive system that he becomes bewildered and annoyed to the extent that either he loses his respect for the firm or gives up completely in disgust.

As to whether any system leaves an undesirable psychological effect upon the new employee depends in a large measure on the spirit in which it is administered. Any system coldly handled will fail; whereas a system which perhaps may be a trifle complex can be used without creating resentment by humanizing it.

LABOR TURNOVER

BY LLOYD R. MILLER, *Policyholders Service Bureau, Metropolitan Life Insurance Company*

Is Labor Turnover a Problem? The condition involved in the hiring, loss, and replacement of a company's working force is known as labor turnover. This condition usually means waste, because money and time are required to hire and train new employees. Experience proves that a part of turnover is preventable, and that some types are more costly than others. The first questions to be considered by any one charged with the responsibility for turnover are:

1. Is the turnover normal or abnormal in amount?
2. What is a conservative estimate of its cost?
3. Are the extent and cost of turnover sufficiently excessive to warrant further attention?

How Large Is Turnover? There are many formulae for computing turnover and much controversy still exists as to which is most suitable. At this point, however, a simple measure of one aspect of turnover is usually satisfactory, for example, the total separation rate, or $\frac{S}{P} 100$. Here, S is the total number of separations during a given period and P is the average number of persons on the pay roll. With this formula, a series of monthly total separation rates can be obtained for a period such as the past year.

Is Turnover Abnormal? The next step is to compare this series with a norm or standard to determine whether it is low, high, or average. In the case of the factory industries, standards are provided by the U. S. Bureau of Labor Statistics in the form of indexes of labor turnover.¹ The bureau also

¹ This project was undertaken and for some time continued by the Metropolitan Life Insurance Company, which transferred it to the Bureau in July, 1929..

compiles similar indexes for certain industries. Whenever suitable standards are not available, the best plan is to secure the experience of several comparable companies.

How Much Does Turnover Cost? Lastly, a rough estimate of the cost of turnover is advisable. This will take into account such items as: employment office expense incident to hiring and placing, training expense up to the time when an employee can learn his new job, and losses due to spoilage and to increased wear and tear on machines and equipment. It is usually a good idea to make separate estimates for skilled, semiskilled, and unskilled jobs, and to note to what extent each type of job contributes to the total number of separations. With this information at hand, conservative, minimum cost estimates are possible and intelligent decision can be made as to the amount of attention turnover requires.

What Causes Turnover? Assuming the preliminary analysis indicates that turnover is a problem of some importance, a consideration of causes is in order. Employees are first hired; some of them stay with the company, others quit, are discharged, or laid off because of lack of work; then replacements are made by further hiring. These phenomena can be measured by hiring or accession rates, stability rates, quit rates, discharge rates, lay-off rates, and replacement rates. Each of these rates measures only one phase of the condition known as turnover. Consequently, in this discussion, the term turnover refers to a condition rather than to any single measure of that condition.

In so far as separations occur on the initiative of individual employees, the causes are as complex as the motives which stimulate human action. Economic, health, family, and personal considerations—all have a part in determining the final action of an individual. Separations due to managerial initiative are usually traceable to economic conditions, managerial policies, and the quality of supervision.

Consequently, while it is impossible in most cases of separation to single out a specific cause, yet it is possible by an analysis of several hundred separations to learn many of the outstanding reasons which together have brought about the general condition known as turnover. With this knowledge at hand, constructive measures can be taken.

The Exit Interview. Fundamental to the keeping of reliable records of labor turnover and analyzing its causes is a procedure for interviewing employees immediately prior to their leaving the company. The type of organization will determine who conducts these interviews. It is important, however, to have a person who commands respect and confidence, and who is tactful, just, understanding, and a good listener. It is also helpful to have privacy and quiet.

Those who interview employees have a threefold function:

1. To learn all pertinent facts about each employee and his reasons for seeking employment elsewhere.
2. To give information, whenever advisable, regarding opportunities in the company and how the employee may best take advantage of them.
3. To serve the employee, taking into consideration his own best interests and the interests of the company, and consequently, creating goodwill toward the company.

1112 HANDBOOK OF BUSINESS ADMINISTRATION

It is usually advisable for an interviewer to prepare himself with sufficient information to enable him to discuss intelligently whatever problems arise. The following outline will indicate useful data, most of which can readily be obtained:

- A. The individual and his personal problems.
 - 1. Age.
 - 2. Nationality.
 - 3. Sex.
 - 4. Education.
 - 5. Marital status.
 - 6. Number of children.
 - 7. Other dependents.
 - 8. Other members of the family employed in this company.
 - 9. Length of time in the community.
 - 10. Home owner or tenant.
 - 11. Other sources of income.
 - 12. Previous experience.
 - a. Jobs held and length of time at each.
 - b. Reasons for change.
 - c. Have changes meant advancement?
 - 13. Physical condition.
- B. Previous record with the company.
 - 1. Department.
 - 2. Job.
 - 3. Rate of pay.
 - 4. Hours.
 - 5. Length of service.
 - 6. Special training in the company.
 - 7. Transfers.
 - 8. Increases in wages.
 - 9. Bonus record, if any.
 - 10. Attendance.
 - 11. Ratings.
- C. The present problem.
 - 1. Reason for leaving reported by immediate superior or department head.
 - 2. Would department head recommend reemployment? Why?
 - 3. Other comments by department head.

While no hard and fast procedure can be suggested, it is, of course, the first duty of the interviewer to try to understand *why* the employee is leaving. The reason first given is not the true one in many cases, and the truth can only be learned by obtaining all the available information about the employee, his job, his relationships with others, and then trying to put one's self in his place. The interviewer must use his judgment in determining what facts will be useful. The following outline may suggest some of the supplementary information which may be obtained during the course of the interview:

- A. What is the employee going to do after he leaves?
 - 1. Has he secured another job?
 - a. If so, what is the name of his new employer and address? What is the new job, the pay, the hours, the future?

- b. If not, has he considered the possible difficulty of locating a job and the result of unemployment while doing so both upon himself and his family?
- B. What is the employee's attitude toward this company?
 - 1. Would he advise any one else to work here? Why?
 - 2. What future does he think there would be?
 - 3. Would he ever want to work here again himself? If so, in his old department?
 - 4. Has the employee any suggestions for improving working conditions, inequalities in rates and methods of pay, supervision, training, etc.?
- C. Would the employee like our help in securing a job somewhere else?

One problem is to get in touch with an employee immediately at the time of leaving. The accepted practice is to require a *clearance form* originated by a department head or foreman and signed by the employment department before the final payment of salary or wages is made.

Analyzing the Causes of Turnover. The findings which result from exit interviews may be analyzed in many different ways. A satisfactory method used by many companies is to post the information regarding each separation under the proper classifications on a form such as is shown in Fig. 1. An analysis of separations by months and by departments is helpful, and the questions shown at the foot of each column usually suggest further subjects for investigation.

A few hints on keeping this record and analyzing it follow:

- 1. Be sure that every employee is interviewed before leaving. Require an O.K. from the interviewer before final pay-off.
- 2. Check up doubtful cases to see if the reason given by the employee and his immediate superior tally. If not, further information and the exercise of good judgment will be necessary.
- 3. There may be several reasons for leaving. Check the one you think most important and note further details, if necessary, to help you recall the case.
- 4. It is most important to decide whether an employee is discharged, laid off, or quits voluntarily.
- 5. Do not confuse discharges for incompetency with those made for disciplinary reasons. The former implies improper selection or placement; the latter may indicate faults in the supervisory force as well as in the employee.
- 6. Do not conclude that the reason "leaving for a better job" always means competition in the labor market. Some employees are inclined to give this reason to conceal the real one. Find out, if possible, just what the better job is and how it is better.
- 7. Consider each exit from the company in the light of previous experience as shown by the analyzed record to date and take any necessary action at once.

Economic Causes. Economic conditions have a much more important bearing on labor turnover than is frequently realized. The ebb and flow of general industrial conditions bring about alternate increases and decreases in orders for manufactured goods. These cannot be produced without raising the accession rate, and consequently the volume of employment, the lay-off

rate meanwhile declining. But as the volume of employment increases, the surplus available for hiring dwindles and the labor market becomes a "sellers' market." Almost any one except the unemployable can find some sort of job, and the man who already holds a job can find around the corner plenty of others offering to him real or imaginary advantages. Hence, arises a rapid and violent increase in the quit rate in a period of rising rates of production. Intimately associated with this is the fact that heavy accessions naturally load the force with short service employees, among whom the quit rate is well known to be higher than among employees of longer standing. In contrast, when prosperity gives way to crisis, liquidation, and major or minor depression, lay-off rates rise. Accessions and the volume of employment diminish. Quit rates almost at once decline, partly because the bottom drops out of the competition for labor and partly because the laying-off process has removed a larger proportion of short service than longer service employees with their better "persistency."

Through the use of various indexes¹ constructed by the United States Bureau of Labor Statistics, it is possible to form a more intelligent opinion as to the effect of economic conditions on the labor market and hence on an individual company's turnover experience. Sometimes, it is possible to make comparisons with the experience of separate industries and localities. The United States Bureau of Labor Statistics now constructs turnover indexes for the following industries: automobiles, boots and shoes, cotton manufacturing, foundry and machine shops, furniture, iron and steel, saw-mills, and slaughtering and meat packing. Through cooperation with state and local agencies, statistics are also available for factory industries in a number of states and cities individually.

Internal Causes. Changes in managerial, sales, production, financial, and industrial relations policies and practice all may have their influence on labor turnover. Yet, the significance of such changes frequently is not realized. As an aid in interpreting the course of each turnover variable, it has been found useful to keep a monthly record of major changes which occur. The following list may be helpful in keeping such a record.

Major Changes in Company Policy or Practice

A. General and financial changes.

1. In organization functions and executive personnel.
2. In affiliations (including mergers, subsidiaries, etc.).
3. In product.
4. In plant, buildings, and equipment.
5. In budgeting.
6. In executive decisions based on prospects of business.
7. Unusual events (such as fire, flood, epidemic).

¹ For method of constructing indexes, see William A. Berridge, "Measuring Labor Turnover," *Personnel Journal*, October, 1929.

For change in method, see *Monthly Labor Review*, U. S. Department of Labor, p. 134, March, 1931.

For standard procedure of reporting turnover, see *Monthly Labor Review*, U. S. Department of Labor, pp. 99-100; December, 1929; p. 91, January, 1930.

B. Marketing changes.

1. In sales promotion.
2. In personnel.
3. In distribution.
4. In price.

C. Production changes.

1. In process.
2. In machinery and equipment.
3. In scheduling and routing.
4. In departmental organization.
5. In supervisory personnel.
6. In purchasing.
7. Unusual events (as breakdowns, shortages of materials, etc.).

D. Industrial relations changes.

1. In wages and hours.
2. In employment practice (such as sources of labor, selection, transfer, promotion, discharge, lay-off, etc.).
3. In joint relations.
4. In health and safety.
5. In working conditions.
6. In training.
7. In economic security (such as group insurance, savings, stock ownership, profit-sharing, etc.).
8. In service activities (such as cafeteria, cooperative store, social and recreational activities).
9. In community conditions (housing, transportation, cost of living, etc.).

Reducing Labor Turnover. A minimum of labor turnover is normal and desirable in order to keep open avenues for promotion and to stimulate ambitions and new ideas. But instances of companies confronted with this problem are rare.

A sound procedure for labor turnover control, which in most cases means reduction, has the following essential steps:

1. *Get the facts* through observation, exit interviews, analysis of the causes of separation, and comparisons with available indexes.
2. *Interpret the facts correctly* through studies of the cost of turnover, records of internal changes, and discussions with supervisory officials.
3. *Create an active interest* on the part of the chief executive and see that his interest is known to every one in the organization.
4. *Provide a directing force.* The manager of the personnel department, if there is such an official, is usually the best person to provide direction.
5. *Maintain the active cooperation of executives and supervisory force* in solving the problems which are revealed.
6. *Take definite action.* Study and analysis alone will not reduce turnover.

In following such a program, there are three distinct types of responsibility from an organization standpoint: (A) those of the major executives, (B) those of the executive responsible for personnel, and (C) those of the supervisory force. Taken in order, they are:

A. Responsibilities of major executives.

1. See that labor policies are sound.
2. Stabilize employment by giving careful attention to stabilizing sales and production.

3. Hold the foremen accountable for departmental turnover records.
4. Impress upon the organization the importance of turnover as a cost item. Point out relationships between low turnover and good production whenever possible.
- B. Responsibilities of executive in charge of personnel.
 1. See that employees are selected and placed with the greatest care.
 2. Maintain close personal contact with supervisory force. This will help in taking care of future labor requirements, arranging for transfers, and reducing the number of lay-offs.
 3. Have a promotion policy.
- C. Responsibilities of supervisory force.
 1. Take a personal interest in employees. Demonstrate this interest by seeing that each person receives all the benefits to which he is entitled. Study men, their qualifications, and peculiarities to avoid misfits.
 2. Develop good workers. Be particular about training new employees and getting them started right. New employees are those most likely to become dissatisfied and leave. Train the older employees for better and more difficult jobs so that they can be advanced when conditions warrant.
 3. Provide good working conditions. A supervisor has considerable control over safety and sanitation in his department. See that the ventilation and lighting help to increase production and satisfaction with the job. Discourage cliques and promote a "friendly atmosphere." Call attention to conditions outside of departmental control.
 4. Give a square deal. Do not show favoritism.
 5. Let employees know what they must do to be in line for promotion.
 6. Review earnings of individual employees. If the basic rates need adjustment, report the matter. Piece workers sometimes have low earnings because of poor scheduling and routing of material or improper tool equipment.
 7. Adjust complaints and grievances. Clear up misunderstandings and false rumors. Many complaints can be handled without embarrassment to any one. Present management policies in an understandable way.
 8. Avoid unnecessary lay-offs. When lay-offs are necessary, notify the employment department sufficiently in advance to arrange for possible transfer.
 9. See that employees do not leave without your knowing why. Report your opinion on each case to the exit interviewer.
 10. Cooperate in improving conditions revealed by studies of the causes of leaving.
 11. Develop leadership. Employees respect and stay with a leader whom they feel is looking out for their legitimate interests.

PRINCIPLES INVOLVED IN THE PAYMENT OF DISMISSAL WAGES

By E. H. LITTLE, *Assistant Supervisor of Industrial Relations, United States Rubber Company*

Definition. A dismissal wage is a payment to an employee of salary or wages beyond the time that employment has been terminated by the employer. Such payment may be:

1. Full or part pay for a stipulated period of time.
2. Cash payment in a lump sum at time of dismissal.

Conditions under Which Dismissal Wages Are Paid. Dismissal wages are usually paid under definite conditions where a pension policy is already in effect. The payments are made to persons of long service who fail to meet pension qualifications. These conditions are:

1. *Consolidations or mergers*, resulting in the discontinuance of operations in a given locality.
2. *Changes in products*, resulting in the discontinuance of certain skilled jobs.
3. *Changes in processes*, where older employees cannot adapt themselves to the new methods.
4. *Physical or mental disability*, in cases where employees lack age or service qualifications for a disability pension.

Along with the adoption of the policy of paying dismissal wages, we usually find the company assuming the responsibility of trying to place employees who are being laid off. Local contacts are used to locate other industries which are adding to their forces and employees are directed accordingly.

Reasons for Paying Dismissal Wages. The reasons for paying dismissal wages can be classed under two heads, moral and economic.

Moral Responsibility. As hiring age limits have been more generally put into effect, the individual industry has recognized its responsibility for caring for the employees who have grown old in its service. Furthermore, when an employee, through no fault of his own, loses his job after long years of continuous employment, the period of adjustment is necessarily difficult. He does not know the art of job hunting, nor is he adaptable in acquiring the knowledge of a new industry and learning the work habits of a new job. The dismissal wage helps him to "carry on" through this adjustment period and permits him to exercise some selection in choosing his next job instead of being forced to accept the first thing that is offered.

The pension itself provides a second moral responsibility. For employees, it is a stabilizing factor. Better immediate opportunities without old age security may have been disregarded in the past. With the loss of this job goes that security at a time too late in life to build up service elsewhere.

Economic Reasons. When a dismissal wage is paid in the event of changed methods or changed products, we must consider what would be the effect of not paying it. Laying off a long-service man without any such payment would result in adverse reactions on the part of other employees. As a consequence, resistance to new products and new processes would be built up, which would add to the cost of their introduction. Retaining the man who cannot adapt himself to new conditions and who becomes a block in the way of progress is only another phase of inefficiency.

There is a second economic reason: Public opinion generally is ready to criticize the industry which does not care for its long-service people. Where public relations is a business asset, the dismissal wage is a factor in warding off the unfavorable reaction which would otherwise result from such lay-offs.

To Whom Dismissal Wages Are Paid. As previously stated, the dismissal wage has usually been adopted as an adjunct to a formal pension plan which provides for monthly payments based on earnings and length of service for the remainder of the employees' lives. The provisions of pension plans usually specify twenty to twenty-five years of continuous service and from fifty-five to seventy years of age. Such pension plans have tacitly granted a responsibility toward employees who were eligible both with regard to years of service and age. It is difficult to distinguish between them and the employee who lacks one of the two qualifications. Thus we see growing up a similar feeling of responsibility particularly for the employee of pension age, lacking service; and for the employee with ample years of service, but not of pension age. When, therefore, the conditions specified in a preceding paragraph arise, we find the more forward looking companies adopting a policy of making a termination payment to such employees.

As the pension plan takes into consideration both age and length of service, so we find the same factors figuring in dismissal wages. Some companies provide for dismissal wages after two years of service, but more frequently ten or fifteen years is the requisite. Almost universally we find some account taken of age. For those over a certain age, forty-five being the youngest noted, the service qualification is lowered or the unit of payment increased.

Factors in the employee's record other than age or length of service are not taken into consideration. The assumption has been general that if the industry has retained the employee for a sufficient number of years to make him eligible on the basis of service, the time is past for considering differences in workmanship or general value to the industry.

Lump Sum vs. Extended Payments. Both methods are used. From the point of view of the employer, the former is better since it terminates all relations with the employee at the time he leaves, and the large single payment makes a more favorable impression. On the other hand, it is true that many of the employees spend the large amount unwisely, being unaccustomed to having on hand at one time a sum of money of this size.

The Amount of the Dismissal Wage. The most common formula for figuring the dismissal wage is one week's pay for each year of service. There are companies which give half pay for as many months as the employee has years of service and others that pay an additional number of weeks pay for each year of service in excess of fifteen years to employees of advanced age. In some instances the formula varies definitely with regard to age, length of service, and reasons for termination. The most generous policies, as would be expected, are those applying to total permanent disabilities.

The week's pay is a definite figure in the case of a salaried employee. This, however, is not so with a wage earner. The practice has been to take average weekly earnings over a considerable period of time. The income tax card is useful for this purpose. If the average is for a whole year, weeks of absence, either due to sickness or lay-off, should be deducted. Where it is understood that the payment is on the basis of a week's pay, it is important that the figure used, to be multiplied by the years of service, looks like a week's pay to the employee.

Continuous Service. In almost every instance the payment of a pension or a dismissal wage is based on years of continuous service. This means that records of service must be accurately kept and consistently interpreted. The latter is almost as important as the former. To insure this, a continuous service policy must be formulated. Such a policy should cover the following:

1. *Definition.* Listing of absences which do not constitute a break, such as, leaves of absence, sickness, injury, or temporary lay-off.

2. *Length of time service is protected* in case of the above absences (frequently one or two years).

3. *Deductions.* Limit of absence before deduction from length of service is made for the absence.

4. *Method of Handling Military Service.*

5. *Reinstatement.* Procedure for recording reinstatement of employee upon his return, when previous service has been protected.

Service Records. Records of age and service are very important in the administration of insurance, pension, and dismissal wage policies. One of the principal functions of such policies is the good will engendered. This may be almost wholly destroyed by inaccuracies in records which materialize at the time that the policy affects the individual employee. It is considered good practice to maintain individual service records, which the employees sign at stated intervals, and to keep these service records in a fireproof vault.

Benefits Derived from the Payment of Dismissal Wages. These can be enumerated under three heads.

The Company. Favorable reactions from all employees, as well as from direct beneficiaries, frequently resulting in more efficient operation, readier acceptance of changes, improved quality of product, and avoidance of waste. Favorable reactions on the part of the local community, resulting in better public relations and an appeal to higher types of labor.

The Individual Receiving the Wage. Economic ability to tide over an adjustment period, which is almost as important from a psychological as from an economic point of view.

The Local Community. Projection of the buying power of the persons receiving the wage over a longer period. In some instances, this may avoid a drain on relief agencies. The favorable community reaction results in a direct return to the company of greater cooperation in placing all employees who are being laid off, and to the whole community in a quicker absorption of the unemployed.

SELECTING AND PLACING COLLEGE GRADUATES IN BUSINESS

BY JOHN MILLS, *Director of Publications, formerly Personnel Director, Bell Telephone Laboratories, Inc.*

Why do we want to employ college graduates? Is it because of certain technical ability, whether in lines of economics, accounting, writing, science or engineering, which he has acquired from his college courses and of which

we may make, in our business, immediate use? There may be differences in the reply to this question, but for myself the reply is "no." The college should not be a trade school for industry, and all attempts to make it such by the inclusion of courses of specific industrial applicability are likely to destroy its value in our social and economic life. Are we, on the other hand, in the employment market for college men because everybody else is and we assume we are all on the right track? There is an element of this, and there is a danger of neglecting to develop, by educational opportunities within industry, the man of equal native ability who cannot attend college.

Are we interested in college men because of a greater adaptability and ease of training for many of the routine and repetitive tasks of our business and industrial world? Of such a demand in the past there has undoubtedly been too much. It usually reflects the absence of adequate training facilities for less immediately acceptable employees. It is possible that supervisors or intermediate executives may at times demand for certain of the tasks of their departments more highly trained men than they really require because they are either impatient of incompletely trained assistants, or incompetent of giving through their executive supervision the further training which is necessary. Let us put this question in another way. Are we interested in the college man because we haven't in our own ranks at any time a sufficient number of men capable of advancement, or because we haven't the time to select and train those we believe are equal in ability to the average college man we hire?

After we have answered these questions we shall probably agree that we turn to the colleges in the hopes of obtaining men of good mental ability and personality, who have acquired habits of thought and study which will enable them to see broadly the business and technical problems of the future, to analyze the factors involved, to arrive objectively and without prejudice at solutions, and through personality and executive ability to give those solutions weight and effectiveness.

I believe in this case in writing specifications for the man and not specifications for the job. For the more routine, repetitive, and standardized tasks of industry, job specifications may be written, but when it comes to employing in the hope of obtaining the future creative genius or far-seeing executive, we must work to man specifications.

Specifications for the Employment of College Men. The first is that of "intellectual curiosity." Under this term we include not the casual and idle curiosity of the feeble and twittering mind but rather that sort of curiosity which leads to a continued and orderly effort to determine the why of the physical or social phenomena of the world about one.

The second requirement is the "ability to study." It is perhaps the one real aim in education; but the percentage of the population which has the ability to study is much less than the percentage of academic degrees or similar evidences of learning would appear to indicate. Learning looks to the past while study looks to the future. In the first meanings given by the familiar authority of Webster, "learning" is "gaining knowledge, understanding, or skill" while "studying" represents "applying the mind" and acquiring knowledge "by one's own efforts." It is this ability to apply one's

mind and acquire knowledge by one's own efforts which the college man that we want in industry must have acquired.

The third requirement is the "habit of study." Apparently this is a habit which takes time to acquire and the four years of a college course have frequently proved insufficient time.

The three remaining specifications have to do with the student's attitude and abilities in human relationships. The fourth requirement in our specifications is, therefore, the ability to learn from men. The fifth is the ability to cooperate with men; and the sixth the promise of ability to lead and influence men. These last three requirements in the specification are placed in this order, because the ability to learn from men is the most important, and, if inherent in an applicant for employment, must in time lead to an ability to cooperate with men and a basis of trust and confidence which will provide opportunities for leadership. These are the main specifications which business and technical industries should try to satisfy in hiring the product of our colleges.

Determining the Qualifications of an Applicant. Having established the specifications we must next set up a method for determining whether or not the applicant is sufficiently within the limits of the specification to warrant employment.

In the selection of a candidate for employment there are three questions to be answered: (1) Along what lines of endeavor lie his fundamental interests and urges? That is, what are his aptitudes? (2) Has he the mental foundation to produce in this line? And (3) has he the personality, character, and physical qualifications for such productive work?

In selecting men the interview method is best although it has its obvious limitations. In such interviews the greater part of the time and effort is expended in arriving at an answer to the first question and the answers of the remaining two questions are by-products, that is, judgments formed very largely during the answering of the first question. Of course, in the case of college graduates it is always possible to obtain reliable records as to their accomplishments during the past four years both in academic work and in campus activities. These supplement the interviewer's judgment in answering the second and third questions. A part of the interview is usually, however, spent in obtaining directly some indication as to the applicant's mental ability; and the method of so doing may well be described.

Importance of an Unhurried Interview. As far as possible the interview is unhurried and devoid of the brusqueness of an oral examination or inquisition. The outline of the applicant's college work and campus activities is usually at hand in the form of a filled-in employment application. The interview should be as far as possible an essentially social meeting of an older college graduate with a more recent graduate, in which the older man may make friendly inquiry as to the college experiences and interests of the more recent graduate.

The conversation proceeds more or less naturally, but guided by frequent questions of the interviewer. The naturalness is greater, of course, the greater the possible allowance of time. Time, too definitely limited in advance, tends to make the questions of the interviewer too consecutive and

continuous and even to sharpen them; all of which is unfortunate and detracts from the free association of ideas which is desired. At some point in the interview some subject, which has thus naturally come into the conversation, is taken up by the interviewer for a little more intensive discussion. It may arise from a mention of some professor whom both know, from the description of some course of study which the applicant has had, from some summer employment in which he was engaged, from the mention of a book or a theory with which some professor was concerned, or, if time is short, it may be somewhat artificially injected into the conversation by the interviewer.

The subject which is thus taken up for more intensive discussion should be one with the fundamentals of which the applicant is presumably familiar; and to assure this they may even be stated by the interviewer as his contribution to the conversation. This means also that the chosen subject must be entirely familiar to the interviewer. It should, however, pertain obviously to the past experiences of the applicant rather than to those of the interviewer. The mention of this subject gives rise on the part of the interviewer to a question which has presumably not been met before by the applicant, but the logical discussion of which should be within his possibilities. Preferably it should be a question which does not permit of a categorical answer but requires an analysis of the factors upon which a correct solution would depend. By the thought processes and methods and by the lucidity of expression and promptness of comprehension of the applicant, while discussing this question, the interviewer may arrive at his own judgment as to the applicant's ability to study things out.

In this connection it cannot be too strongly emphasized that the question must not call for information in its answer, must be in a line in which the applicant has already expressed an interest, must be sufficiently familiar to the interviewer so that he may guide the conversation by a sort of a Socratic method, and preferably should have arisen in a most natural and conversational manner. If the interviewer is himself properly informed on the factors involved in a consideration of his own question he should be able to add, conversationally, facts or points of view which will arouse and test the curiosity of the applicant.

This method has been applied by a number of very successful executives. When properly handled it cannot be beaten by a prearranged set of answers, nor by an assumed attitude on the part of the applicant. There is no preparation which can be crammed to meet it. On the other hand, it cannot be reduced to a formula to be applied by an inexperienced employment clerk. The men from whose interview of myself I picked up the idea of this method were in widely different lines of work, one a college president and the other an executive in a large engineering industry; but both were broadly cultured and widely read. In order to practice the method to best advantage with arts college graduates it is usually essential that the interviewer should have a good background in science, economics, and psychology, with some interests in history or literature. For graduates of engineering schools, the sciences of physics and chemistry, with some knowledge of mechanical, electrical, and chemical engineering, form a satisfactory background.

This interview method which arrives by free association of ideas at something from which the interviewer can make a judgment is the method in which I, personally, have greatest faith for determining whether or not an applicant for employment has the intellectual curiosity, and the ability and habit of study, which are half of the six "man specifications." As was said before, it also affords opportunities for judging the last three of the specifications.

Determining the Aptitudes of an Applicant. We all know how applicants tend to have acquired certain individual prejudices as to types of work and express preferences which are misleading and usually inadequately representative of their own interests. In an attempt to avoid this state of affairs, and to get below the surface of these somewhat conventional preferences, I have for some time been using for technical school graduates a method which was described in the *Journal of Personnel Research* under the title "Engineering Aptitudes."

The method involves asking the applicant some four definite questions with, of course, such supplementary ones as the conversation may later require. These force him to express in abstract terms his more or less instinctive interests. In the paper previously mentioned these questions are phrased for technical school graduates whose training as you know is rather set and definite. I have not yet arrived at equally definitive questions for arts college graduates whose training varies widely. For arts college men it is necessary to vary and adapt the phraseology of each question to fit as nearly as possible the situation of each applicant. I shall, therefore, only outline the questions in abstract terms, without supplying definite phraseology and allow you to consult the original paper if you desire to judge the method from its technical school form.

Questions Which Indicate Aptitudes. The first question assumes that the applicant is looking for a job which will lead to a career, that is to the expression of his personality through some medium, just as an artist chooses a medium for his self-expression. For this let us assume four media, namely those of (1) ideas, (2) men, (3) things, and (4) economic symbols. The philosopher has his career almost entirely in the medium of ideas, a politician in that of men, a mechanic in the field of things, and a statistical economist in that of economic symbols. But there are combinations of these fields with primary and secondary interests; thus a good teacher is usually interested in ideas and men; a business promoter in men and economic symbols; a research scientist in ideas and things; and so on. It is illuminating to have each applicant write these four media in his order of relative interests. When that is done, and leaving out of account certain typical arrangements which are common to the engineering and scientifically minded, we usually find the salesman or business manager type expressing his preference in the order of men, economic symbols, things, and ideas. The type to be concerned with the management of technical processes expresses the interest as men, things, ideas, and economic symbols, or as things, men, ideas, and economic symbols, if he will take more interest in the equipment than in the human beings with the management of which he is concerned. The advertising man, personnel worker, and the like will be in favor of the order:

men, ideas, things, economic relations. And the expert on costs and accounting in the order: ideas, economic symbols, men, things. Several cross check questions which may be used to supplement this question may be easily devised. They serve also to lead to somewhat finer differentiations.

Another question asks as to the applicant's preference between technical responsibility and supervisory responsibility, assuring him that both types are equally rewarded, in salary and opportunity of promotion, for similar contributions to the welfare of the company. The men who put ideas high in their list will express an instinctive tendency toward technical responsibility and those who should not be placed in jobs calling for the development of technical judgment will choose supervisory responsibility. The expert buyer may well express a high interest in things and ideas, while the successful salesman is interested in men and economic symbols.

Cross-check questions can be formed and gradations recognized. Another question may be of interest: one which has to do with motive. We assume that as human beings we are driven to make such successes as we do by virtue of three motives, namely, an economic motive, which is the desire for more and more of the things of this world; a motive of ambition, which is interested primarily in acclaim and credit; and an instinct of workmanship, which is the play instinct grown up, a motive which finds its satisfaction in the activity itself, and at the time, rather than in results which follow. We may then ask what the applicant estimates are the relative proportions of these three urges in his own make-up. The management type runs high, apparently, in the motive of personal ambition, somewhat less in economic motive, and very little in the instinct of workmanship.

Labor Turnover in Two Years Following Graduation. Selection and placement, which this paper considers, are steps which precede training and development; and one phase of this broader problem is of immediate interest. As we all know, there is a large turnover in employment during the first two years after graduation, which means a considerable waste both for industry and for the individual. Some of the cost involved, of course, may be credited to valuable experience by the individual or charged to the expense of selection by the industry. Even assuming correct analysis in the original selection and placement such waste may still occur and the fact that it does is a serious failure on the part of both industry and the college graduate.

There is an explanation for the restlessness and apparent impatience of the college man, who is receiving his introduction to industry, which is not the conventional one that he is unwilling to undergo the hard training which business requires or that he expects to be made a general manager within the first year. Such attitudes may be symptoms but one main cause of the restlessness and dissatisfaction of so many college graduates which leads in the first year or two to severance of employment, voluntary or otherwise, is inherent in the college training and the better that training the greater may be the dissatisfaction.

Those who tend to become technical experts in industry are usually high in their instinct of workmanship, next in ambition, and least in economic motive.

During his junior and senior year the college man studies courses in economics, psychology, philosophy, or science and mathematics, which require

of him, as a rule, severe mental effort. He has been working on a high intellectual level. Then he enters the world of business and industry and the things which, for the first year or two at least, he must learn are matters of organization routine, locations, familiarity with stocks, lists of customers, methods of accounting and the like, all matters which can be learned by a man of high school education or even less. In general he has no task which is on as high an intellectual level as that on which he has been working in college. He has important information to acquire; but very little of the thinking, which is required of him, is of the same difficulty and continuity. Can we always blame him if he develops impatience and feels that the tasks on which he is engaged are below his mental abilities?

The worst of the situation is that he comes unconsciously to the conclusion that business and industry do not demand continued effort on as high intellectual level as did his college work. Of course he is given no task of this level until he has acquired the background of company experience and informational knowledge. The result, in general, is that his habit of study is interrupted, never to be regained, and that is why in the man specifications previously stated insistence has been placed upon the habit of study. Only the man who has the habit of study will, as a rule, ride through the early years of his industrial connection without a permanent lowering of the possible level of his intellectual effort. The result of such a lowering is that when, in the course of advancement because of his business acumen, human adaptability, and experience, the college graduate reaches finally a position where he is confronted with problems demanding intensive study on a high intellectual level, he is out of the habit of study. Then he is incapable of adequately attacking these problems; and instead of obtaining the solutions by scientific methods, he is guided by hunches, by so-called business judgment, and by conscious or unconscious imitations of the practices and methods of others.

Lack of Intellectual Growth. The failure of the college man to continue to grow intellectually during his early years in business, and the failure of business to provide facilities for such development, is the most serious failure in connection with the introduction of college men to business. In the case of those few men who have firmly acquired habits of study it will naturally be avoided, but in the case of those with weaker habits the failure can only be prevented if industry will provide facilities and guidance for the continuation of really hard study on the part of their college employees.

Summary. At our present stage of psychological development an interview method—a "method of free association" should be used. Six qualities are sought: intellectual curiosity, the ability to study, the habit of study, the ability to learn from men, an ability to cooperate with men, and last, a promise of the ability to lead men. One should attempt to find what are the applicant's innate tendencies and to get past preferences which are prejudicial and get at his fundamental aptitudes. One should then try to determine whether or not the student has the intellectual ability to deliver along the line of those aptitudes, and finally, whether he has the character and the personality, which is merely the expression of character, and the physical qualifications which will permit him to work successfully along those lines.

COLLEGE WOMEN IN BUSINESS

BY LOUISE MOORE, *Manager, Employment Department, Donnelly Garment Company*

Modern business executives, particularly in well-established organizations, are willing to make rather extensive use of college men. But about the value of college-trained women many of the same executives hold grave doubts. The number of such women in any one organization has so far been relatively small, and employers have frankly not known how to use them to the best advantage. These executives are sincerely interested in developing this type of worker, a fact proved by the generous response made by company members of the American Management Association to an informal questionnaire sent out in the course of an inquiry. Their comments varied from "I do not feel that a college education is a handicap to a girl planning to enter the business world" to a detailed account of the substantial contribution made by college-trained women employees. Women in business responded with equal generosity to letters of inquiry concerning their work since leaving college. In general, the problem of college women in business is one about which there exists more feeling than fact discovered after dispassionate investigation.

Summary of Response to Questionnaire.¹ The facts developed by the correspondence and by conversations with employers and employed women may be summarized as follows:

A considerable number of college women have deliberately chosen business as a career during the past twenty years. While employers are willing to make use of these workers they have not learned how best to select them and give them the elementary training on the job which they must have. Moreover, they do not know how to interest the college employees in their jobs, or how to use their college education to the best advantage. When employers are inclined to give the women more responsibilities, they are deterred by the probability of their finally marrying and leaving business. Business as organized at present offers to women little chance for advancement to positions of large responsibility. Executives realize that they cannot under these circumstances satisfy and hold the college woman of unusual ability and ambition.

On the other hand, the college women, while expecting to serve an apprenticeship in business, dislike routine work which makes no use of their four years of intense mental training. Many of them demand, sometimes with conspicuous lack of understanding of business problems, a larger responsibility than they have earned. They feel the unfairness of being denied the systematic business training accorded college men of mental capacity not superior to their own, and they resent the fact that their progress is limited by the custom of the organization. As a consequence of the lack of encouragement and of opportunity these college women sometimes fail to give to their employers the best results of which they are capable.

¹ As of Feb. 16, 1927.

Statistics of the number of college women in business are incomplete. Alumnae records of Bryn Mawr, Smith, Vassar, Wellesley, and Mount Holyoke indicate that an average of about 4.2 per cent of former students and graduates about whom data are available have entered business pursuits. This includes those in clerical and secretarial positions.¹ Probably a large number of women from universities and from other colleges have chosen such careers.

Most of these women have deliberately selected business since college graduates can choose among more occupations than can those who have not gone so far in school. Other occupations offer larger initial salaries and often shorter hours and longer vacations. The reasons for choosing business are sometimes Utopian. During the World War an acquaintance of mine was besieged by wild-eyed young college women demanding industrial executive positions. "Why," she wearily asked one enthusiast, "do you want to go into industry?" "To settle the controversy between capital and labor" was the emphatic reply.

The career of business, admittedly one of the most attractive for men of our generation in interest, and often in rewards, will be chosen by an increasingly large number of women with college training. It will at least be proportionate to the number in college. Very soon the "bright high school girl" so much in demand by employers at present will be supplanted by the "bright college girl." Indeed, one employer remarked rather ruefully that soon he will be obliged to hire college women whether he wants them or not, because all the desirable girls will have gone to college.

Our inquiry proved that the use of college women by business organizations is general, but the experience of most firms is limited. Answers were received from organizations of various sizes, among them some of the largest employers of labor in this country, situated in many different states, engaged in almost every sort of service, and in the production and distribution of a great variety of products. Their experience may be considered indicative of the experience of many other employers. About one-fourth of the company members of the American Management Association who answered the questions said that they had never employed any college women. These represented railroads, manufacturers of steel and of tools, of electrical apparatus, food, paper, and office appliances. About 15 per cent reported very limited experience. These were chiefly public utilities, machinery, textiles, and printing.

The most extensive use of college women was described by insurance companies, department stores, and manufacturers of various products. No uniformity of practice could be found to exist in the employment of college women by firms doing the same kind of work, since some have experimented much more widely than others.

Positions Filled by College Women. College women do a great variety of work. A number own and operate businesses built up by themselves, or

¹ Bryn Mawr, 0.8 per cent; Smith, 2 per cent; Vassar, 5.6 per cent; Wellesley, 6.5 per cent; Mount Holyoke, 6.1 per cent. A composite of available statistics not always from the same year, and certainly not based on the same occupational classifications.

inherited. A few officials of banks and of public utilities are college-trained women. Among the positions filled by employed college women the ones most frequently mentioned were librarian, dietitian, domestic science advisor, stenographer, file clerk, secretary, office department supervisor, assistant personnel director, assistant buyer, assistant in planning department, head of educational department. Production work in industry, where such enormous changes have been made during the past few years, and the whole field of selling, except department store selling, and some selling of securities had occupied few college women. Practically all of the situations reported lay in the field of what business men call "number two" positions, not in the line of executive responsibility, nor that leadership which undergraduates are so earnestly besought by college lecturers to assume in order to repay the public for the expense of their education. While many women successfully supervise groups of women workers, and even groups composed of women and younger men, few have charge of considerable numbers of men. Men do not like to take directions from a woman, and it is not the custom in the community to arrange matters that way, sums up the general feeling. Also, the employers think the public does not care to consult women in important matters, such as investment of large sums. Hence their use in banks doing a general business must be confined to certain departments where they do not meet the public. Twenty-nine firms answered definitely that women were not considered eligible for executive positions, while nineteen firms stated that women who were capable could receive such responsibilities. One manager said that they would not keep a college woman whom they could not rapidly advance.

Capability in Filling Responsible Positions. Lack of experience over a long period was given in some cases as the reason why college women have not been able to assume larger responsibilities. We have no data to prove what women can do if given proper training and encouragement, if they enter business in large enough numbers and remain long enough to fill many subordinate positions which will give them experience as executives. Also, we have no information as to the results of removing all prejudices against them as business workers. "Women are up against a velvet wall of prejudice, erected by men who on the surface are most cordial in their acceptance of women as fellow workers," was the summary of a man who has many opportunities for observation.

We may safely leave to the future the question of women in the highest executive positions. If the college woman can enter business and make moderate advancement, she will be obliged to be satisfied in this generation, which is necessarily doing pioneer work.

Lower Training Costs. An employer should find in the college graduate today a woman who has passed successfully all the preliminary intelligence tests, and has had the background of education which many large corporations are glad to give employees at company expense. "We have computed our training costs," said one, "against our returns for their services while they are with us, and we find that it is a paying proposition, and expect to continue using this source in employing correspondents." "We want the most training for our pay-roll dollar, and this we get from the college graduate," said another.

The list of assets of a girl just graduated from college reads about as follows: Some grasp of facts and some knowledge of where additional facts can be found; ability to study; an open mind; a fairly impersonal viewpoint; and some social graces. This list, made by employers, omits the personal satisfaction in the college experience that the graduate has as a permanent possession. But, as one woman said, one's personal satisfaction does not bring large returns in the marts of trade.

Employers' Objections to College Women. Perhaps because she does bring to her work a good deal of potential power, the employer expects of a college woman too much in the way of application of her knowledge to new problems, and an interest in a job which is useful but inspiring only because it is part of a much larger whole. He also expects a good deal of instant adaptation to a totally new world where the usual question put to the proposer of an idea is, Will it work? Does it pay?

Employers have summarized the reasons for the rather frequent failure of college women whom they have employed to fit into the business world as uncertainty of tenure, restlessness, inability of the worker to fit into her environment, impatient attitude toward the routine of work and toward business associates, lack of imagination, lack of training for business. These same complaints are made of college men; but college women suffer under the handicap of being women. Even after considerable experience many employers feel that they know very little about their women employees.

The employers do not share the old-fashioned idea that no one wants to marry a college woman. The danger of college women's marriage seems to be ever present in the employers' mind. College women may remain a shorter time in business than other women, because they enter at a more advanced age. The threat becomes less menacing after five years. Employers take the resignation of men employees with five years' service with some equanimity, feeling that the cost of training has been met by the services rendered. This is probably true in many cases of college women also.

Restlessness seems to be a chronic malady of college women in business and may arise from various causes. The first is, that the graduate may not have chosen her vocation honestly and intelligently. After a little experience some vocationally unadjusted women become, as one employer put it, "uncertain in their own minds as to what the final benefit of devoting a life to business service will be." We who do hiring know that most people waste years in finding out what work they can do best. The efforts at vocational counselling now made at most colleges should help in proper selection, particularly if colleges make an effort to discover business needs as well as the desires of the students. Employers will be obliged to sift out misplaced college women as they sift other employees.

Failure of Employers to Outline a Job Clearly. Much of the restlessness which employers complain of among college women is due to a failure of those in personnel positions clearly to outline the job, its agreeable and disagreeable features, its future and the means by which advancement can be made. Periodical conferences on progress help college employees as they do other workers. Furthermore, some restlessness is a sign of mental activity, and expected of young men. "I never held a job over six months until I was

about twenty-five years old," remarked a successful business man, "and I worked all over the United States." Women are as restless as men, but convention ties them more to one location until they begin to earn their own money. A number of business executives admitted that the reason why many of their college women employees had been restless was that the organization offered them no real chance to advance. "Men would be just as restless under the same circumstances," several of them wrote.

Unsatisfactory environment may cause restlessness. A college woman, used to a certain amount of social life with persons of her general training and tastes, may find herself in a small community with fixed social conventions and cleavages which do not permit her to have any standing. If it is no one's business in the organization to see that she meets congenial associates, she will soon leave a good job to return to a city where she can have friends.

Some college women who are not restless fail because of their attitude toward their work and their associates. While wanting to do big things they fail to study the intricate organization of their own business, and dislike the routine tasks which at first constitute their only possible contribution to the work of the firm. They want promotion as soon as they have mastered a task, when the task is what they are hired to do. They fail too often to see that they are employed primarily to assist, and that their employers are very little interested in their own ambitions for personal progress.

Cooperation with Other Workers. A snobbish attitude toward other workers is too often the outgrowth of the college woman's determination to make her beginner's job a stepping-stone to more congenial work. The morale of a department is considered by an employer of more value than the services of any individual employee. Failure to cooperate with others is a charge brought very often against the college graduate. College training should tend toward democracy, and usually does. Intellectual snobbery does not survive long, particularly if the organization contains any college people of longer experience who can help the new worker adjust herself. Those of us who try to settle differences in departments know that an attitude of lofty disdain toward fellow workers is all too common among grammar school graduates, as well as among college women. Occasionally the charge of snobbishness arises because the young college-bred employee, trained in self-control, seems to the other workers cold and unsympathetic, when her only fault is that she is not accustomed to speak the language of her new world.

Rigorous Discipline of Business. Employers complained also that college women who enter the business world decline to adapt themselves to the long hours, incessant demands, short holidays, and rigorous discipline demanded for success, or even for survival. This is probably caused not so much by laziness as by a feeling of revolt against subordination of self to the requirements of a ruthless and impersonal master through an endless series of years. Most mature men have forgotten their early rebellion at the stern discipline of business because it began when they were young and generally rebellious. College women, and college men too, have enjoyed leisure up to maturity, and their struggles at adaptation are regarded with the greatest surprise by the seasoned worker. Work during vacations is highly recommended as a preventive of this unfortunate condition.

Intelligence and Health. Among the complaints made, two were conspicuous by their absence. When women first began to demand college education numerous pages were written to prove that they had not the intellect to acquire such learning, and if a few did possess this unladylike amount of brains their health would be shattered by their studies. It is significant that no employer expressed any doubt that college women had the amount of intelligence he required, and no one said anything about delicate health of these employees.

Training on the Job. College women in business feel that some consideration is also due to their point of view. They are willing to accept the universe, but hope to work some changes in their relationship to it. They hope in time that they will be given as much training on the job as an intelligent man receives. Without some of this training they cannot progress far. Several letters from employers stated that, while men of promise are given a systematic experience in the organization and training in various branches, no women are so taught. Another large corporation advances to executive positions only persons with engineering training and experience. An official of this corporation, in mentioning specific work on which women had been employed, stated that a number of college women had applied for engineering jobs. "But we employ no women on this kind of work," was his conclusion. It is reasonable to suppose that some executive and technical capacity is latent in the large group of employed college women, and that training will make them more valuable to the company for which they work.

It is not only formal training on the job which women lack. They cannot learn from casual acquaintances as men do, on smoking cars, in hotel lobbies and at lunch. The talk runs much to "shop" on such occasions; men pick up business acquaintances and learn about trade conditions. Conventions close such sources of information to women. A friend of mine once remarked that she was glad when her hair turned grey, because then certain social conventions were waived and she could cultivate casual acquaintances without social censure.

Question of Remuneration. Salary demands made by totally inexperienced college women caused some comment by employers. Occasionally these complaints are justified. But in some cases the demands are probably not very insistent and are based on ignorance of the current wage of the job in question. One young graduate, many years ago, when she applied for her first job was asked what salary she expected. "A thousand dollars a year" was her immediate response. The interviewer must have been a person of discernment, for his reply was, "No doubt you can get that much somewhere, but the wages in this community do not run so high." The position which the graduate gladly took paid \$495.

College women in business hope that in time they can not only be given opportunities to learn more about their work in its large aspect, but that they can progress further in this work than they can now. Many of them believe they could successfully undertake larger responsibilities. A considerable number believe also that serious inequalities in salary could well be eliminated. Remuneration is still largely a matter of tradition, the state of the labor market, and the power of individual bargaining. Women have not on the

whole any advantage arising from tradition, or from the labor market, or from bargaining ability. The sooner college women cease to expect that salaries automatically regulate themselves the happier they will be.

Competition with Men. Employed college women believe that they meet with undue competition in their working life. In business, except in the routine work, they are competing in a man's world. They must count on the opposition they meet as competitors, as well as the opposition they face as a new force entering a crowded field. While women need not use the same tactics as men in this competition, they should clearly see the forces they are contending with and be dispassionate in judging their powers and planning their strategy. Men are accustomed to work with men. They naturally think of them rather than of a woman worker when a promotion is to be made, unless the woman has brought herself to the attention of the powers that rule by conspicuous service of some sort. Besides, in the competitive world where so many variables are to be reckoned with, it is not strange if men are unwilling voluntarily to introduce in high executive councils the "incalculable feminine viewpoint."

The employers' and the college women employees' point of view should both be considered by the personnel department. The college woman, like the college man, must be properly selected, placed and trained. Both are actuated by the same motives: desire for economic success, ambition to receive acclaim and credit, an instinct for workmanship—these motives varying in degree with each individual. The positions at present open to college women differ greatly from those open to college men. The kinds of advancement open vary still more. College men are usually expected to become, in time, technical experts or supervisors of important divisions of an organization, or executives of even higher rank. Business concerns have up to this time provided limited fields for success of women, whether college-trained or not. Consequently the training in less responsible work has been given to men who are to advance, rather than to women.

Good personnel practice demands that study be made of positions on which college women can probably succeed in making substantial contributions to the business, both at the present time and in the future. There should be no glossing over the facts as to present and future policies of the organization with regard to women's advancement. Even if the field for advance is limited, college women can be shown that there is joy in doing an excellent job with imagination and enthusiasm, and that this pride in work is at least one way of winning more substantial individual and group recognition.

How the Colleges Could Help. Colleges also could help if they would consent to recognize the world which their students must enter after graduation. Isolation from the hard realities of life is considered to be great at men's colleges; it is almost complete in most women's colleges. College faculties must be selected for their intellectual equipment and teaching ability. Some experience in business life would be an additional help, especially to women instructors whose contact with ordinary community enterprises, bitter industrial conditions, and the ungrammatical but shrewd office or factory worker is non-existent now. If college faculties realized how hard their graduates must struggle to adapt their carefully phrased

theories to the concrete facts of existence, they might care to give a practical slant to some of their lectures, showing how theories are applicable to the common task.

Business Needs Broader Knowledge of College-trained People. Business is itself changing, certainly in ethics, probably in its demands on employees. As organizations become larger and meet with more competition they need more variety of intelligence, a broader knowledge than can conveniently be gained from experience alone. The success of the schools of business administration is proof of this realization by men in business. Women are admitted to some of these schools. In the changing world of business women must be prepared to take a larger part.

CHAPTER IV

JOB ANALYSIS FOR POSITION CLASSIFICATION

CLASSIFICATION AND COMPENSATION PLANS AS TOOLS IN PERSONNEL ADMINISTRATION

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Personnel Administration Defined. Personnel administration is used in this connection to include the processes of formulating policies, and exercising managerial functions, respecting the selection, compensation, well-being, and conduct of the persons making up the human organization of an enterprise.

The only other phrases that have gained any vogue at all for this branch of management are "employment management" and "industrial relations." It is felt that the term "personnel administration" is the best. The term employment has a narrow meaning as well as a broad one and this leads to confusion. Similarly, the term management is somewhat more restricted in its significance, implying the exercise of executive functions whereas policy-making functions are very largely involved. The term industrial relations does not at all convey the idea, although it is appropriate as a name for the larger aspects of the problem of relationships between the workers as a group on one side and the proprietary and managerial interests on the other. Problems of industrial relations in this sense are often handled by the same department as that charged with personnel administration and what name should be given to the department is a matter that can well be left for local choice.

It is to be noted that the word "tools" is used. This has been done intentionally to emphasize the idea that classification and compensation plans in themselves are of no importance and that, regardless of the academic interest that they might hold for some, they would not warrant consideration by a group interested in management problems if it were not clear that they constitute definite, practical instruments for, and aids to, the handling of the important and intricate operations that go to make up that whole phase of administration that has been termed personnel administration.

Analysis of Classification and Compensation Plans. A classification plan for a service is the plan which, after due investigation and analysis and the preparation of "position descriptions," (1) groups the positions making up the service into "classes," each with a distinctive "class title," according to the similarity of their distinguishing characteristics such as the duties and responsibilities involved and the qualifications required of their incumbents; (2) specifies the nature and requirements of each class or group of positions thus recognized in "class specifications"; and (3) records the rules, regulations, and practices respecting positions and their incumbents thus classified.

It is evident that the classification plan as described is not a simple thing. Further, this statement incidentally defines many other important terms: position description, class specifications, and "class title." It shows clearly that a classification plan is made up of a number of parts. In the first place it is a record of a schematic arrangement of positions making up the service with primary reference to those attributes that really determine what the position is, namely, the work involved. This part may be referred to as the "classification outline." It also includes a set of descriptive statements and a record of standards for the several classes of positions established. These same statements are convenient places in which to record various other rulings that relate in common to all positions found within the classes described. The record in its complete form is referred to by the term class specifications. The term "occupational specifications" may be preferred. The third element in the classification plan under this definition embraces those general rules of application and administration that are necessary to govern it. To recapitulate, the classification plan comprises:

1. A schematic arrangement or classification outline by which the positions in the service are grouped into classes. The analysis of duties and the writing of position descriptions are considered as prerequisites.
2. A set of class specifications, and
3. A code of "classification rules" for purposes of application and administration.

The word *class* has been used for a definite concept, namely, for the idea of a group of positions sufficiently alike with regard to those attributes of vital importance from the standpoint of personnel administration, such as duties, responsibilities, and qualification requirements, to make them properly subject to common treatment in the processes of selection and compensation as well as related employment operations.

This concept is indispensable and must be recognized regardless of the term applied to it.

Other Names in Current Use. We do not find anything in the general literature of personnel administration that names, expresses, or attempts to express the whole idea of a classification plan as it has just been outlined. The notable exception is found in the public service where these various principles were pretty clearly recognized as far back as 1919 and have been rather thoroughly written up from time to time since then. But we do find in the business and industrial world such words as "job analysis," "occupational description," and "job grading." At times these are used very broadly, at times very narrowly; sometimes they mean a process, sometimes a written record, sometimes a policy. The first two of these phrases are nearly interchangeable. In some uses they correspond roughly to the term class specifications (or occupational specifications) as just defined and in other applications they are used to mean a "position description." Although it is admitted that their present loose use makes any more definite use hereafter improbable it is probably incumbent upon the writer to attempt to indicate a desirable restriction in their application.

Take job analysis first. There is no objection to it as an informal way of referring to the *process* of ascertaining and examining duties and the other

attributes that go to define a given position but it is believed that the more exact term position description is better for use in referring to the record that is made of the findings of such an examination.

Defining the Word "Job." The word job in this expression is not good for scientific purposes because of its ambiguity. A job may mean a specific assignment to an individual that makes up only a small part of the sum total of his work, or on the other hand it may mean a very large project calling for the attention of a considerable force of men. In a dictionary sense a job is an odd or occasional piece of work. It is true that it is used as an informal or semislang word for situation or place of employment but it is doubtful whether its use because of this is really an advantage.

The word position fits what we are discussing perfectly. It is definite, dignified, and entirely appropriate. It is hereby accepted for use in these remarks and recommended for general adoption where reference is to the idea of an office, a place of employment, a post, or a group of duties calling for the attention of some one individual for their proper performance. The idea of a position should be held up as something distinct and apart from an employee. That is not at all to say that the incumbent does not often influence the nature of the position, but it means that the concept of a position should be of things to be done rather than of the doer.

Application of Job Analysis. As has been said above, job analysis is sometimes used for a process, sometimes for the description of a position, and sometimes for the specifications of a type of position. It has been recommended that it apply to a process—nothing else. The word analysis immediately brings to mind the taking apart of a thing, its solution into constituent parts, or elements, and their examination. It should not be used to mean a plan, a record, or a statement, even though it may be grammatically proper to refer to the record of the findings of an analysis as the analysis.

The term occupational description has had some use and is advocated in a well-known treatise on personnel management largely because of the first objection raised above to the word job. But occupation is also somewhat ambiguous; it sometimes refers to a specific position but more often to a vocation or line of work. As a synonym for the term position description, occupational description is for this latter reason not good. As the synonym for the term class specifications it could well be considered. In fact the term occupational specifications has been advanced as an alternative to class specifications in these remarks. But the word specifications is believed much better than description because it carries the idea of a standard, of something to be demanded. Also there is a practical advantage in using it if we use the word description for our record of what we learn about an individual position.

Definitions of Compensation Terms. A compensation plan for a service is a plan by which positions as arranged under the classification plan are evaluated in relation to one another, scales of pay (either absolute or relative) are specified for each class of positions, and established policies, practices, and rulings regarding the compensation and changes in compensation of positions and their incumbents are recorded. The compensation plan is made up of a number of more or less distinct parts:

1. The "compensation schedule"—the structure of the value relationships among the classes of positions (either in terms of money or terms of other units that will record relationships and that can be translated into money value).

2. The "scales of pay."

3. The code of "compensation rules" for purposes of application and administration.

There has been so little put on record with regard to the development of compensation plans in this complete sense that there is no need to pause long to discuss terms or definitions. The expression that is most commonly used in referring to this general aspect of personnel administration is "salary standardization." It is felt that the word "salary" is no better, if as good, as the word "wage" and that the word compensation inasmuch as it embraces them both and includes certain other elements that cannot be disregarded, such as allowances of various kinds, is preferable to either. There are strong objections in the writer's opinion to the word "standardization" in this phrase. It implies a certain inflexibility that it is not at all desirable to imply. It also implies that the absolute pay is standardized whereas the thing that should be standardized is the relationships in pay. The term, like the term job analysis, has one good use, however, in that it can be applied to the name of a process and in that use may be more popular than a wordy expression such as "the preparation of a compensation plan." But that is a very poor reason for its adoption in any scheme of scientific terminology.

Perhaps mention should be made of the term "job grading" as it has been used. The objections to job as against position, just stated, stand. When positions are classified, the classes can then be graded or ranked. In other words, the process of classifying includes the idea of grading.

Uses of a Classification Plan, Its Place in Personnel Administration. The first need for a classification plan is in connection with the primary employment function of *selection or hiring*. Unless those charged with the securing of the individuals best fitted for the work that the enterprise needs to have done, have a clear understanding, reduced to a complete, usable statement of what that work is, how can they proceed effectively? Nor is it sufficient that they should be able to get the facts with respect to any particular position at the time it is to be filled. It is not practicable to carry in mind or to carry on record a sufficiently complete statement of the duties and requirements of thousands and thousands of individual positions or even of hundreds and hundreds and to devise special tests or even bases for personnel judgment on short notice with respect to each one of these. Those positions that call for the same qualifications ought to be grouped together and the qualifications that they call for ought to be scheduled and specified, the specifications ought to be continually improved upon, and methods of selection ought to be perfected with reference to them. Applications of candidates for employment ought to be related to these classes of positions. As new positions are added to the organization, their places in the classification should be noted and, of course, existing positions should all be tabbed to show just exactly where they belong. The use of classification titles will, of course, do this readily. The practice of using these same titles in all employment negotia-

tions, all interdepartmental communications, throughout the pay-roll procedure, and in budget records, will follow as a natural result. The first use for classification, therefore, is in aiding the recruiting of the service, and an auxiliary use is in standardizing employment nomenclature.

Another use, probably just as important as the first named, is to afford a basis for the development of an equitable and uniform *compensation plan*. The first consideration in determining the proper pay to be offered for any position in an organization is obviously the nature of the position. Before any one occupies it there can be no other basis. It is of the very essence of an equitable compensation plan that the relationships between the scales of pay prescribed for the several kinds of positions should be correct; difficult work, responsible work, important work, being compensated in such a way as to attract those who prove their fitness to handle it. It would be manifestly impracticable in a large organization to attempt to set up, in terms of differences in the pay scales, those minor variations that exist between positions of substantially the same class. The whole problem of devising a compensation plan is brought within the bounds of possibility by dealing with positions in groups, each group or class including all positions that are properly subject to common treatment. But the classification plan has already done this, and it serves a very useful purpose in this connection.

Still another use of the classification plan is to provide a place and a method for the recording of the rules and practices of the service with respect to the various kinds of employment and types of positions that constitute it. The class specification, for example, can be expanded to include much more than the statement of general duties and of required qualifications.

The Process of Classification. The service of any enterprise that calls for the joint effort of a number of workers may be said to comprise a number of positions having an organization relationship to one another, that is, grouped into departments or divisions and arranged in established lines of authority. Each of these positions calls for the performance of certain duties, the carrying of certain responsibilities, and in most cases, the exercise of at least a degree of authority. The nature of these duties and the magnitude of the responsibility and authority, together with the departmental and other environment, determine what qualifications the incumbents must possess. Where it is difficult to describe the common characteristics of a group of positions that are to be allocated to the same class in the process of classification, it is often possible to adopt the expedient of explaining the kind of ability, kind of experience, kind of skill, etc., that a person qualified to handle the work must possess.

The first step in the process of classification is, therefore, to learn all that it is practicable to learn regarding the duties of each position in the service. The term job analysis, if it is to persist, ought to be restricted to this process. A rather elaborate technique has been built up and perfected in this work by those who have been engaged in it professionally, and there is at least partial record of it in certain places. There is no space available to go into it here.

When the examinations have been completed and the position descriptions written, the actual work of classifying may be undertaken. Following

the common sense method that should be adopted in any classification process, it is desirable to recognize first broad general divisions and then smaller groups until the smallest working unit is reached. This is the class—a group of positions that may to all intents and purposes be considered interchangeable. In many cases each position will constitute a class in itself. Almost all higher and supervisory positions fall into such “one-position classes.” The broad general groupings may be both according to line of work and according to importance of work.

The major features of the complete classification plan that will result from this program will include:

1. A classification outline or schematic arrangement which will set up the broad occupational divisions, and under them the narrower occupational groups and the individual classes of positions, arranged according to series of classes, coming within each occupational group.
2. The class specifications (or occupational specifications) each to show:
 - a. The adopted class title to be applied to the class and to all positions in the class.
 - b. A general description of the duties common to all positions of the class supported by typical tasks as illustrating kinds of work falling within the general description, chosen from actual cases, to support and amplify the general duties statement.
 - c. An enumeration of qualifications required, which may be grouped into two parts—necessary qualifications and desirable additional qualifications.
 - d. Notes regarding lines of promotion, preferably in the form of a schedule of positions considered next higher in rank, and positions considered next lower in rank.
 - e. Notes regarding compensation if there is a compensation plan in effect. This, of course, is the place where the scale of pay for this class of positions should be recorded.
 - f. Any other facts, rulings, or memoranda that relate to the class and that have a bearing on administrative processes in personnel matters.
3. The rules of administration presenting clearly and in logical order, the principles and methods by which the classification plan is to be devised, adopted, applied, and amended; by which new and changed positions are to find their places under the classification outline; by which specifications are to be constructed, employed, and perfected; and by which employment processes are to be controlled or related to this basic plan and its scheme of nomenclature.

Further Notes on Classification Technique. Some further discussion of the problems and processes of classification technique may be of interest to some, although probably only to those who have the actual classifying work to do. The primary classification may be both vertical and horizontal; the horizontal scale representing the general line of work or occupation, and the vertical indicating the importance. The broadest column is often called a “service” and the next subdivision or subcolumn the “occupational group.” Next we come to a number of classes that are closely related, being differentiated only by rank. We call this division a “series of classes” and finally we come to the class itself which includes all positions that are substantially alike.

The vertical differentiation is substantially a differentiation on the grounds of importance or rank or supervisory authority. It is impracticable to draw straight parallel lines throughout the service on such a basis, however.

Characteristics of Positions. The attributes of positions—much like those of persons—are manifold, and the relationships between them which might be recognized in a classification scheme are bound to be numerous and complex, although it is true that they are of two general types—similarity in *kind* of work and similarity in *rank* of work.

This suggests the possibility of using a two-dimension chart as an aid in presenting some of the methods and terms used in the actual process of classifying. It is to be understood that the analogy between such a physical arrangement of areas and the mental grouping of abstractions is rather forced, but it may be helpful in illustrating a few ideas hard to convey otherwise. For reasons later given, a three-dimension model would be better if it were practicable to reproduce it. A word description of the layout will have to serve.

The horizontal scale of the illustrative chart would indicate the range in the *kind* of work involved, that is, it would attempt to represent the variation in the subject matter dealt with, in the types of skill and fields of knowledge required, and in the form of application of this skill and knowledge to this subject matter. Broad fields of service would be represented by wide columns erected on this horizontal scale; say, a column headed "clerical service" and flanked on the one side by one headed "accounting service" and on the other by one labeled "mechanical service." The divisions between these fields would be represented by vague and wavy lines. Narrower sub-columns would illustrate the occupational groups, the "general clerical," for example, with the "office appliance operating" shading off to the right and the "accounting clerical," to the left. The common clerical "series of classes," junior clerk, senior clerk, principal clerk, would occupy the middle of the general clerical group column—and each level in this subcolumn, namely, the junior portion, the senior portion, etc., would also be separated from the next by the same kind of hazy band or twilight zone to illustrate the absence of any sharp or hard and fast distinction.

The vertical scale of this chart—as will already have become obvious from the foregoing illustration of the clerical series—is a scale on which the range in the *rank* of the work would be indicated. It would attempt to represent the variation in importance, difficulty, responsibility, authority, and those other factors that usually determine rank.

The positions themselves—if we carry this analogy to a logical conclusion—would take the form of areas of divers sizes and shapes. The vertical dimension will represent the range in importance from the "duty" of lowest rank to that of the highest. The horizontal dimension will indicate the range in kind of work involved. Some of these areas would be charted as falling clearly in the central portion of one of the rectangular spaces representing a class. Others would jut from one class into the one next to it—for example, one might overlap the boundaries of the senior clerk and senior account clerk classes because partaking in a measure of the nature of each. Another might lie in part in a "senior" rank although the greater part of its area may be in the "junior" space just below.

The Process of Preparing a Compensation Plan. The work of devising a compensation plan calls for the use of all of the data collected and employed in preparing the classification plan and the supplying of the one additional element of evaluation. This evaluation must first be relative. It must take into account other classes of positions. It must also be relative as it relates to the value of the service of the employee upon appointment as compared to that of his service after he has become thoroughly familiar with, and experienced in, the work. In addition to the element of evaluation, exceedingly complex questions of managerial policy need to be dealt with, relating, for example, to the basis of increases above the minimum or starting rate, the rate of increase, the times of increase, the amount of increase at one time, the enforcement of limits, the compensation adjustment in case of promotion in rank, etc.

Notes on Current Practice Respecting Classification Plans. Probably the best way of picturing recent progress with respect to the actual adoption of classification and compensation plans is to give the results of a recent canvass made of a number of large business enterprises of the more progressive type. This will give a picture of the status of the movement today that will be even more significant than any attempt to trace the history of the movement during recent years.

The concerns making up the "sample" are forty-eight in number. Lines of business in which office workers predominate are strongly represented. The average number of positions is around 5,000 (a total of 240,000). The average number of office positions (excluding technical desk positions) is 1,300 (or 26 per cent).

Of the forty-eight concerns included in the canvass, thirty-eight (or 79 per cent) apparently maintain a classification plan which has at least some of the essential elements as outlined in the foregoing discussion. Some refer to a classification plan giving compensation as the basis, but these are not included among the thirty-eight and should not be, because such a mere grading according to pay does not constitute a classification in the sense of the term as used in these remarks any more than a classification according to departmental location, hours, age of incumbents, or any such feature would.

In fifteen cases it is specifically stated that the plan applies to all positions in the organization, no occupations or departments being exempted, but in most cases only part of the service is embraced. In only two cases, however, is the clerical service excluded. The average number of positions covered is about 800, or 16 per cent of the total, but these last statistics should probably be considered as very unreliable because of the vagueness of the information as to just where the classification stops in each case.

In only eight cases is it claimed that the plans reported were used before 1920, and in three of these eight cases the plans were just being started at that time. However, most of those that have not yet installed anything along this line realize their need and are considering something of the kind at the present time.

On the fundamental question of the basis for the classification, this inventory of current practice showed a fairly general conformity with the principles enumerated in this paper. All of the thirty-eight concerns indicated

that their classification plans are based on either the duties of the positions or the qualifications required in incumbents or on both. Three said specifically that personal qualifications were the basis, while five took pains to point out that they paid no attention to personal qualifications but followed duties exclusively. Three companies that reported a grading scheme based on compensation have not, as has been said, been included at all. The remarks on the basis of classification brought out widely varying ideas as to the degree of refinement that is desirable. In some cases job analyses are apparently carried to a point where practically every position is made a separate class. In other cases very broad groupings are accepted as sufficient.

Standardization of Class Specifications. An attempt was made to ascertain the extent to which the form and content of class specifications or occupational descriptions have been standardized and it was very clearly brought out that there is nothing even approaching uniformity of practice in this respect. However, only seven out of the thirty-eight companies that claim to have classification plans admit that they do not maintain any specifications at all. But the specifications that are referred to are apparently of many degrees of completeness. Twenty-four concerns maintain a statement of duties applicable to the class as a whole. Some of these include enumerations of specific tasks. Ten of the thirty-one companies do not attempt to include specific examples of duties falling within the class. All but six concerns say that the specifications indicate the qualifications that incumbents should have, but in the actual statement of these qualifications there is every imaginable variety.

Promotions and Transfers. But few of the specifications throw any light on lines of promotion, although some seventeen concerns do indicate that they have set up promotional lines, at least in a general way, for their own guidance. Apparently promotions and transfers are customarily cared for as special matters involving individual judgment at the time. While it probably should be assumed that reference to essential records is made when this judgment is to be exercised, nevertheless the suspicion arises that the accident of departmental location and personal relations with those next higher in the line of supervision all too often might be the controlling factors.

The opinions of the companies as to the uses of job analyses, occupational descriptions, standard terminology, etc., as tools in the work of employment management, may be summarized by saying that thirteen mention "basis for selection," twenty-five mention "basis for compensation," and three mention "basis for budget control," and none mention "basis for standard terminology." Some mention "use in promotional schemes" but the evidence that such use is made is not convincing.

Notes on Current Practice Respecting Compensation Plans. Apparently action with respect to the development or recognition of more or less formal compensation plans is not so far along as in the case of classification. However, thirty of the forty-eight companies claim to maintain a schedule of fixed salary ranges in a written form. Of these all are said to be related to the classification plan in effect.

The elements recognised in the scales of pay included in the compensation plans reported upon are indicated by the following tabulation:

Rate	Companies
Minimum.....	33
Maximum.....	31
Intermediate.....	19

Written regulations, as such, are apparently not usually considered part of the plan. The practice in matters of administering the scales seems to be, however, that in allowing salary increases, time and merit are both considered by all companies except one which depends entirely upon seniority and one which allows only merit to decide all cases.

On the interesting question of whether the minimum rate is, or is not, always the starting rate, it is found that commonly the minimum rate is not adhered to for starting, but rather that the background of the applicant, including his education, age, existing outside rates, previous similar experience, exceptional qualities, etc., is allowed to alter the rate proportionally. This is true in all but twelve cases. Even in these cases, occasional exceptions are found for technical men, and for others under abnormal conditions.

SOME CONSIDERATIONS IN INSTALLING A SALARY ADMINISTRATION PLAN

BY E. H. LITTLE, *Assistant Supervisor of Industrial Relations, United States Rubber Company*

Why Do We Need a Salary Administration Plan? A survey of jobs upon which a job classification can be based looking to an organized plan of salary administration is not a day's, nor a week's, nor a month's job. If the clerical force numbers upwards of 500, involving more than 100 different jobs, a year is the least time upon which to plan. The doing of the job is a specialized piece of work making its own peculiar demands on the persons carrying it on. The first question then is, Is it worth doing? Will the returns justify the money expended?

Some of the conditions which have led to affirmative answers to those questions are:

1. Varying rates of pay for similar kinds of work.
2. Present salaries the result of seniority rather than difficulty of work performed.
3. Increases in salaries due to efficient self-salesmanship on the part of the employee, or to the selling ability of the department head rather than to improved performance or greater value to the company.
4. Material differences in standards of salaries in different departments, in other words, high and low paying departments frequently irrespective of the type of work done.
5. Resentment of department heads to promotions. If the jobs have not been analyzed, demonstrating the differences, the transaction savors of competition within the organization.
6. Irregularity in the practice of granting salary increases.

7. No plan of promotion enabling the employees to fit themselves for the higher positions where the higher salary should be in proportion to increased responsibilities.

8. Hiring of new employees at higher rates of pay than now being given to satisfactory workers on similar positions elsewhere in the organization.

By Whom Is Such a Plan Initiated? The first stimulus towards salary administration comes usually from one of the three following sources—from the employment department due to difficulties with hiring rates, transfers and promotions; from the treasurer's department, due to evident discrepancies in salary standards between departments; or from the person with final authority for granting or refusing salary increases. The greater his desire to be fair to the employee and to the company alike the more difficult does he find his task of giving equitable decisions on the basis of insufficient, unanalyzed and non-comparable data. The actual source of the impetus, however, is of minor importance compared to that of being assured that the chief executives are thoroughly convinced of the necessity for action before the initial steps are taken. This is the first essential and fundamental principle of a salary administration plan.

Outline of the Plan. At this point we are assuming that the chief executives have decided that a better method of salary administration is essential to the best interests of the company. They are then confronted with two distinct problems; first, what must be done; and secondly how to do it in their particular organization. In outline a salary administration plan divides itself into four distinct parts.

1. *Job analysis*, involving the collection of complete information regarding the duties of each position, and the qualifications necessary to satisfactory performance.

2. *Classification of positions*, involving the establishment of grades, each grade calling for approximately the same exercise of responsibility and job technique, and the classification of positions accordingly.

3. *Salary standards*, calling for the establishment of a minimum and maximum salary limit for each grade.

4. *Salary adjustments*, involving the working out of a standard procedure for analyzing new positions, reclassification of revised positions, and the considerations of salary adjustments on the basis of individual performance, and with regard to the established salary ranges for the respective grade.

Each step planned must be reviewed in the light of the following question: Is it calculated to promote greater cooperation and agreement on the part of the persons concerned? And that question must be considered individually by each company for each step taken. No specific formula will be applicable although one general principle is worth keeping in mind. Opportunity to participate is the first step in promoting the desire to cooperate.

Personnel of the Committee. Having outlined the steps in reaching our objective, we now come to the problems of initiating the undertaking. The chief executive or executives will undoubtedly appoint a committee. Its personnel deserves careful thought and real consideration. If the organization in question represents the growth and expansion of a single organization,

in all probability the authority for a wide diversity of functions will emanate from a single source. It will be sufficient for subordinates of all grades to know that "the V. P. is back of this." Under such circumstances the interests represented by the personnel of the committee are of secondary consideration. Under these simplified conditions, the committee will usually be found to be a working committee, selected for the ability and contribution each individual member can make. Desirable as this situation is, it has to be sacrificed under other conditions. Where the organization represents the amalgamation or consolidation of several companies, dividing lines and departmental walls are well defined and unyielding. Authority is widely decentralized and divisions are practically autonomous in themselves. Here the committee must be selected for their prestige with their particular subordinates. They will be men very much higher up in the organization than in the former case, and due to their greater responsibilities will have little time to devote to the details of the problem. They cannot be expected to do any of the real work. It must be their function merely to accept or reject the conclusions and formulated plans which are presented to them for consideration. Under such circumstances it might be advisable to have a second working committee, but this seems a bit cumbersome—unless it proved to be the natural outgrowth of circumstances.

In our own case the title of the committee has come in for quite definite consideration. In the beginning it was quite naturally called the salary standardization committee. Later when we found that the by-products covered a field so much larger than merely salary administration, we changed its title to the job analysis committee wishing we had made that decision originally. This is a bit of experience which we pass on for what it may be worth.

What Positions Are Included? An early decision is concerned with the scope of the plan, that is, how many of the positions will be included. It is advisable but sometimes not expedient to carry the study up to and including section or department heads. One company has described the extent of their undertaking, as excepting only the junior and senior executive officers. The guiding principle is this: To correctly appraise the higher clerical positions, it is essential to have all of the supervisory positions on which any of the actual clerical work of the section is actually performed. Without the knowledge of the functions of persons holding such positions, it is very difficult correctly to determine the degree of responsibility involved by the position in question.

Next, coming to the actual work involved; even if the committee's function is to "work" not "sell," at least 99 per cent of the work must be done outside the committee. Needless to say the *selection of the person or persons for this job* is vital to the success of the whole undertaking. And this raises another question: Shall one depend upon one's own organization or shall one look elsewhere among the many consultants available today for such work? Briefly I am lining up here the pros and cons of doing the job with a person from the local organization.

Arguments against Using Home Talent. 1. The job requires specialized analytical ability and a knowledge of office procedure. A person with such ability and knowledge may not be available.

2. There is a very definite technique of analyzing and classifying jobs which requires considerable experience to acquire proficiency. The local person has to learn while doing.

3. The local person has less prestige and will be subject to more questioning by department and section heads.

4. For the reasons given above it will probably take longer to complete the job.

Arguments in Favor of Home Talent. 1. In the course of doing the job much valuable knowledge is accumulated which is partially lost to the company if the work is done by an outsider. This is all the more pertinent if the work might be carried on by a member of the employment department. When such knowledge is the background upon which the employment department functions, the department heads feel that their problems are understood and appreciated.

2. A member of the local organization will have more means of feeling the pulse of the organization and will assume more responsibility for correcting situations which would interfere with the future success of the eventual plan.

3. The job is not complete with the analysis and classification. It must be carried on. New positions are created and duties change on old positions. If the major responsibility for the actual work has been carried on by a consultant, when he withdraws the plan may become the step-child among other more favored projects. Under such circumstances its future is questionable.

4. Considering the by-products which are yours if you do the job yourself, there can be no question that the cost element is all in favor of the home production.

How to Gather the Necessary Information. In this instance I shall outline our own method. The committee had decided upon asking each employee to fill in a questionnaire outlining his duties—regular, periodic, and special; and each department head to fill in a questionnaire for each position under his supervision. In this, the department head was asked to check type of duties, education, training, experience, and qualifications necessary to satisfactory performance, as well as to give the element of the job most difficult to learn.

In the name of the committee a letter was written to each department head outlining the proposed plan, the objectives to be sought, and the importance of their cooperation. To this was attached a copy of the department head's questionnaire, the employee's questionnaire, and a copy of the letter for each employee which the department head was to send out in his own name. It will be evident that our intention was to show at the start our dependence upon the participation of our department heads, and the importance of their contribution to the whole plan. We sent out all questionnaires at the same time, studied them on their return, department by department, interviewing the employee or supervisor when discrepancies were evident, wrote up a position description, roughly classified the position, and then studied similar positions irrespective of departmental lines. This briefly was our procedure for collecting the necessary data.

In our comparison with other companies, we have found quite different methods in use. A very general method has been to proceed department by department, asking only the employee to fill in a questionnaire, follow this up with a personal interview, write up a position description, check this with

department head, and then classify the position. The argument has been that the department heads were too busy to fill in questionnaires. The two methods may be equally good and it is for that reason that I have outlined them here. The choice between the two will probably depend upon local conditions, and the committee's opinion as to which method is best calculated to secure the participation of the department heads, that being the important point. In my own mind the personal interview with the employee is the most efficient way of actually collecting the necessary information about the position. It may not, however, prove to be the most practical means of securing the desired cooperation.

The "Position Description." On several occasions we have used the term position description. It may need explanation. With us it covers the following items:

- Title, department, etc.
- Educational requirements.
- Necessary experience, general and specific.
- General brief description of position.
- Type of duties.
- Rating of job.

The position description should include all the elements of the position by which its classification is determined, and it forms the basis of any discussions regarding the position either with the committee, the department head concerned, or the employee, as well as providing the employment department with a very useful tool for all its transactions. As such it is a vital cog in the wheel. Its value and usefulness depend at the same time upon its brevity, clarity and all-inclusiveness, a combination not easy of attainment.

Having collected and analyzed the necessary data regarding each position, the question now before us is:

How Are the Positions to Be Classified? And it is a crucial question. Upon its satisfactory solution depends the success of the whole plan. By some means these positions must be grouped so that like salary ranges for a given number of positions recommend themselves as the fair and equitable remuneration for the duties discharged. Following are three different methods being applied, usually in combination:

1. The departmental order-of-importance method. By this method the positions in each department are arranged in the accepted order of their importance. Departments are then coordinated, and dividing lines drawn between grades.

2. The grade description method. By this method definite grades are recognized and described and positions classified accordingly.

3. The job rating method. A scale is set up allowing a certain number of points for each element by which all positions are to be analyzed. The sum of the points judged to represent the requirements of a particular position results in an index showing the relative place of that position with respect to other positions. At this first mention of the job rating method, we wish to emphasize the fact that we are referring to the rating of the position itself, not to the person on the job.

In practically no instance that I know of was any one single method used to the exclusion of the other two. In general two methods have been used, one as a check against the other.

The order-of-importance method. This I shall not attempt to discuss, having had no experience with it.

The grade description method is dependent for its success on the definitions of the grades being simple, clear cut, and distinct each in themselves. Brief, concise descriptive terms are essential. If you expect to use these grade descriptions in asking the department heads to check your classification of their positions, their differences must be easy to grasp and to apply. It is true there will be positions on the border line, usually because they involve two distinct sets of duties of quite different character. In these instances, an arbitrary decision is almost inevitable. But on the basis of experience, I would say that clear cut distinctions between grades with some arbitrary decisions were preferable to elastic grade descriptions which were difficult to master and permitted of several interpretations. In deciding upon a suitable grade description, one can obtain very definite help by comparison with other companies who have been working on the problem. Our own grade descriptions are based on those developed by Marion A. Bills in her work for insurance companies, and published in the report of the Committee on Salary Standardization of the American Management Association.¹ Our revision was in favor of a more simplified form which to us seemed logical for the executive offices of an industrial concern compared with the inevitable subdivisions and refinements necessary to a large financial institution.

Following is a copy of the grade descriptions by which we have classified our positions:

A. Work of office- or messenger-boy character.

B. Simple operations. Use of a few definite rules. Routine operations performed under close supervision.

1. Simple clerical work requiring no experience; or training, but no experience, on simple machines, such as, sorting, key punch, ditto and adding machines.

2. Simple clerical work but requiring some experience to perform job satisfactorily.

3. Outside training but little experience on more difficult machines, such as, typewriter, non-listing calculators, multigraph, etc.

C. Requiring recognized clerical ability. Application of a large number of rules though definite and specific; or considerable experience on machines listed under B3.

1. Requiring recognized clerical ability, but the exercise of no definite responsibility, either because of the character of the work, or the closeness of the supervision.

2. Experienced operators on following machines; typewriter, non-listing calculators, bookkeeping and tabulating machines.

3. Work of C1 character but of more responsible nature.

D. Requiring complete and intensive knowledge of a restricted field.

1. As above.

2. Work of D grade plus supervisory responsibility of a minor character.

¹ See p. 863.

E. Requiring knowledge of general policies; command of general rules and principles with application to cases not previously covered and may require long experience with the company.

1. Work of the above character where experience is not necessarily long but must have been gained within the company.
2. Work of a more technical or more difficult character, but experience not necessarily within the company.
3. Work of *E1* grade plus supervisory responsibility.
4. Work of *E2* grade with long experience with the company. Or work of *D* grade which is not subject to check and therefore where the promotion of the employee on the job is generally undesirable.

F. Work of a highly technical or confidential nature or of semiexecutive supervisory character.

1. Highly technical or confidential work.
2. Semiexecutive and supervisory in character.

One advances the job rating method with a full knowledge of its limitations and dangers. On the other hand it has advantages so distinct that it cannot be lightly dismissed. There is no question but that it presents the correct approach to the problem. It is an invaluable aid to analysis, forcing the raters to consider each element of the position and to form and record the impressions of the importance of that element. That is the only objective, scientific method, in a field which in the past has been governed by only three factors—circumstance, opinion, and the law of supply and demand. And unfortunately some of our clerical positions are so specialized that they are wholly removed from that inexorable level-changing law, and opinion and circumstance have become the only criteria. The rating scale has two stumbling blocks: first, the choice, definition, and interpretation of the elements to be rated; and second, the allocation of the numerical points to each element.

At this point, I shall describe our own method of developing a rating scale and our estimation of its value to us.

First after considerable study, we determined upon the following elements to be rated:

General Education. Maximum points 6. The degree of general education, attained through school or individual study, necessary to give background for all-round performance in the position.

Special Training and Experience. Maximum points 8. The amount of training in special courses, and experience in previous positions required by position in question.

Special Knowledge. Maximum points 6. The amount of specialized knowledge of the functions of the department required to perform the work.

Accuracy and System. Maximum points 6. The necessity for accuracy in copying, posting, checking or machine operation, and the need for system and neatness in performance of work.

Ability to Plan, Execute, and Accept Responsibility. Maximum points 8. The extent to which position requires the ability to plan for self or others, to carry out policies, and to be responsible for results.

Supervisory Ability. Maximum points 4. The degree to which successful performance in the position requires the ability to direct others and to obtain their cooperation for the attainment of results.

Judgment. Maximum points 6. The degree to which position requires the exercise of discriminating judgment and the ability to arrive at logical conclusions.

Mental Ability. Maximum points 3. The mental alertness necessary to sense the significance of facts and situations or to grasp and remember a multitude of details.

Ability to Make Good Contacts. Maximum points 4. The extent to which position requires a personality which can make a prepossessing impression for the department or the company.

Integrity and Professional Ethics. Maximum points 4. Degree to which position requires a person whose integrity has been proved and whose discretion regarding people and things can be depended upon.

Evaluating in Money. In making use of this method of evaluating our positions we realized that no rating on our part would affect the salaries we were forced to pay on several different positions. Our old friend, the law of supply and demand, whose alias is the "current market rate," told us in no uncertain terms what we *had* to pay the office boy, various grades of typists, stenographers, comptometer operators, telephone operators, bookkeepers, tabulating machine operators, and so on, for about 32 different jobs. That was fact 1. Fact 2 was that we needed the rating to indicate correctly the approximate salary for our specialized U. S. Rubber jobs—order clerks, stock distribution clerks, financial analysis clerks—in other words, for clerical positions where the employee's value to us was in direct proportion to his knowledge of *our* particular business. And fact 3 was concerned with the office boy: What did he represent to us? Theoretically and practically he was the potential clerical worker of the highest grade, excepting only specialized, technical workers. And we had to pay \$12 a week for this potentiality alone—no experience and only minimum training. The difference then between his \$12 and the market rate on these 32 other jobs represented the money we had to pay on a weekly basis for the necessary qualifications for those positions over and above that required for the office boy. On this basis we distributed to the different elements of the rating scale a given amount of money ranging from 0 to \$38 per week depending upon the position in question. Here was a measuring stick. We checked it and rechecked it until we had arrived at a rating for these 32 jobs which was as nearly argument-proof as we could make it. From then on, every other of the 160 odd jobs is equal to, more than, or less than the measures set up in that original scale for each of the ten elements.

Value of the Rating. Now as to its value, the best I can say for it is, that it has worked. It has seemed to hit the bull's eye in a remarkably large percentage of cases. More important still it has provided a means for us to record with extreme definiteness our impression regarding the elements of the position at the time when the position was being subjected to the closest study and analysis. For future reference that has proved invaluable. Moreover it has provided the means for checking the correct classification of the positions according to the grade description. It has immediately indicated discrepancies, suggesting the need for further check. We have not used the job rating in our discussions with our department heads, but it has provided

the foundation upon which we stood when we were setting forth the reasons for our opinions.

The Establishment of Salary Standards. We are now at the third step in the whole undertaking. The objective at this point is to arrive at fair and practical minimum and maximum salary limits for each grade. The method in general use is to chart existing salaries according to the grade classification. By ruling out those salaries which are abnormally low and abnormally high, we arrive at the general average variation for the grade. At this point it is well to investigate those at both ends of the scale for any given grade. Frequently these high and low spots can be accounted for by age, length of service, or transfer due to a change in organization. When one of these is the explanation, those particular salaries should be entirely disregarded, in arriving at salary ranges. If, on the other hand, such an explanation does not seem to account for the variation, it may suggest the advisability of rechecking the position for some element incorrectly, either over- or underestimated.

Where job rating has been used as an aid to classification, the numerical evaluation is a second indication of proper salary range. The primary function of the job rating, however, is to provide a logical basis for determining the correct relationship of one job to the other. A mathematical formula is usually necessary to convert these numerical evaluations into a salary index. And we would always assume that the best judgment of a group of executives, provided with the wage data covering the company's experience, and wages paid in the community, as well as theoretical indices, would be better than conclusions based upon any one of these factors alone.

Comparison with various companies shows that overlapping salaries for contiguous grades is the usual practice. This may mean that an employee promoted from a lower to the next higher grade will be receiving a salary above the minimum of the salary limit of the higher grade, but for this employee, promotion from the money standpoint means that his upper limit has been pushed that much farther ahead.

There remains to be considered now only the final step.

Salary Adjustments. When we come to salary adjustments, we are in a field where individual company policy will dictate the details of administration. Here comparison of practices between companies will be of minor value since tradition and precedent will pretty surely outweigh all other consideration. However, there are very definite points which must be settled regarding proposed practices. Very briefly, I am listing here the questions which we have under consideration. For some of them the answers are clear in our minds; for others, they are still in the balance.

1. Salaries at present out of line.

We shall not reduce any salaries because of the adoption of a salary plan, although we do hope that promotions may eliminate some, but not all, of present discrepancies. Adjustments upwards will be made gradually.

2. Shall the salary committee pass on all increases or only maintain a checking responsibility for increases granted?

The question is still unanswered for our own organization.

3. What machinery is necessary for maintaining the plan?

We know that a regular follow-up will be essential, as well as a procedure for studying new positions and for reclassifying positions where duties have been revised. Every indication is that this will become one of the functions of the employment department. If we do this we shall be following the example set by other companies.

4. Shall we make salary ranges public?

Not until time has given us an opportunity to bring present salaries in closer harmony with salary ranges.

5. Rating of individual employees.

We are convinced that this will become a necessary part of the plan. We are still studying personnel rating scales and as yet we are not at all convinced that we have arrived at the most essential qualities to be rated.

6. Salary increases.

We believe we shall adopt a regular schedule for consideration of increases, and we think this schedule will differ for the various grades.

Value of the Plan. In conclusion, I should like to quote from the preliminary survey which led our company to embark on the undertaking. One paragraph reads as follows:

Our opinion is that some plan of salary standardization and administration should be adopted which will provide for the studying and grouping of all jobs, which will set minimum and maximum rates for these groups, and which will establish a plan for the reconsideration of salaries at stated intervals. Such a procedure would of itself form the basis of a logical plan of promotion in which there was a direct relation between increase in pay and increase in duties and responsibilities. It would provide the incentive to bring forth the best efforts of our present employees and have the tendency to attract to our force the most desirable of our applicants, and by so doing, it should gradually build up our organization upon the basis of a more contented and efficient force.

Today the objectives remain the same and the probable benefits to be gained from the full incorporation of the plan appear to us to be understated. To them we would add a further advantage. Our present evaluations of our positions are now based, not upon arbitrary rule-of-thumb decisions, but rather upon analytical study resulting in a composite agreement—a foundation out of which is born the confidence of management and employees alike; and confidence is one of the keystones of right human relations.

THE PSYCHOLOGICAL ASPECT OF JOB ANALYSIS

BY RICHARD S. UHRBROCK, *Head Statistical and Research Department,
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Job analysis is recognized as a valuable tool by executives who control large organizations and who cannot know intimately all the men in their employ. When shops were small, turnover low, and the personal contact between manager and men was possible, there was no need for job analysis. Today, the job analyst stands in the same position as the expert accountant. The job analyst makes a survey of the man factor, just as the accountant surveys and reports upon the material condition of the concern.

As a vital factor in modern industrial management, job analysis is only about twenty years old. In 1911 Frederick W. Taylor stated, "Each job should be carefully subdivided into its elementary operations, and each of these units should receive the most thorough time study."¹ Taylor's mechanical studies had impressed him with the value of having each operation in an industrial establishment performed in the most effective way, by the most effective means. It was but natural for him to apply, to some degree, the same technique to the study of the man factor that he had found so successful in solving the machine problems that he met. He looked for some objective measure of a man's work. He found an objective basis for his study in the amount of work done in a unit of time, or the amount of time required to perform a unit of work. The industrial world was impressed with the possibilities of job analysis when the case of Schmidt was reported.² It will be remembered that before Taylor analyzed the job of loading pig iron, the laborers moved, on the average, about twelve and one-half long tons per man per day. After a system of work and rest periods were worked out for this operation, it was possible to move forty-seven long tons per man per day without injury to the workers.

In this pioneer study the important difference between man and machinery was brought out. Taylor realized that he had to intersperse work with rest periods, for two reasons. First, he had to take care of the actual physical fatigue, due to increased muscular effort. Secondly, he had to avoid the psychological effects of fatigue. The problem was twofold. Schmidt was not to be unduly tired physically, and he was not to get the idea that he was being tired out. Actual physical fatigue and the thought that one is tired are two separate and distinct things.

The evolution of job analysis has been characterized by a growing recognition of the psychological factors involved. At first a few of the time study men were prone to view man somewhat as a machine that was capable of greater production, provided he was properly "adjusted" to his work. We find references to "fitting the square peg into the square hole." Men were selected largely on the basis of the physical requirements of the jobs. Attention was given to "working conditions." Sanitary standards were introduced. Work benches and chairs were adjusted so that they were the proper height from the floor. The lighting system was overhauled, and the proper combination of temperature, ventilation, and humidity was taken into account.³ All these things were done under the heading of job analysis, apparently with the idea in mind that if all the work conditions were satisfactory, the worker would be highly efficient. It took a long time for those in authority to realize that the worker who is physically fit, working in a physically ideal

¹ TAYLOR, FREDERICK W., "Shop Management," p. 83, Harper & Brothers, New York, 1911.

² TAYLOR, FREDERICK W., "The Principles of Scientific Management," pp. 42-47, Harper & Brothers, New York, 1916.

³ HARRISON, WARD, "Good Lighting Aids Production," *Iron Trade Review*, vol. 65, pp. 1637-1641, Dec. 18, 1919.

HUNTINGTON, ELLSWORTH, "Civilization and Climate," Chap. VI, "Work and Weather," pp. 111-128, Yale University Press, 1915.

environment, may not respond as a well-oiled bit of machinery, proving satisfactory by turning out a greater quantity of work.

Wage and bonus plans appeared as a means of helping in adjusting the man to his job. These incentives were supposed to function much as oil helps in the smooth running of a machine. Even these plans did not solve all the difficulties. Changes in salary schedules complicate the situation. Such complications, as a result, tend to emphasize the fact that the crux of the job analysis problem is psychological.

What Is Job Analysis? "Job analysis is a method of scientifically dissecting a job in order to determine the component elements and their influence upon the length of learning period of the worker, production, and labor turnover."¹ It has also been suggested that we view job analysis "as the search for habits necessarily used by a workman on the job." This always has been the ideal of the job analysts, and they have gradually moved from a consideration of the physical to the psychological elements in the situation. As a technique, job analysis has gone through four stages. At first, the employment manager, or one of his clerks, wrote out descriptions of the jobs that had to be filled. These descriptions were often in the form of random notes, briefly stating the major duties involved. As the possibilities of the technique were realized, the random notes were followed by carefully worded narratives, or essay job descriptions. These forms, often elaborate, presented a general description of the work, but proved difficult to handle when analysis was required for the purpose of wage adjustment, or the preparation of a training program. In time, the narrative form was supplemented by a "check list." The common operations performed in the plant were listed, and the job analyst, engaged in investigating a particular job, merely checked the items he found, and added those peculiar to the work under consideration. Finally the job specifications in general use today were evolved. These usually combine the short general description of the job with the check list showing the common elements.

Qualifications of the Job Analyst. As the interest in job analysis grew, it became evident that certain qualifications were necessary for success in the work. In the first place, the man who is selected for the work should be mature and make a good impression on the group whose work he is to analyze. He need not necessarily be what is known as a "good mixer" but he should at least command confidence and respect. His job is to get "job facts" from the men, as well as to observe their work. The job analyst must be able to "sell the idea" of making a complete record of the elements that go into the job. By "job" is meant man and equipment functioning smoothly in the performance of work. Qualities that he must possess are patience and tact. He will find it helpful if he speaks the language of the shop. In analyzing the work of printers one soon finds out that those who set type are not "composers" but "compositors." Among the pattern makers the man who does not have a union card is a "skate." To refer to him in any other terms is to put oneself beyond the pale. The telegrapher refers to the day letter as a

¹ STRONG, EDWARD K., JR., and RICHARD S. UHRBROCK, "Job Analysis and the Curriculum," p. 22, Williams & Wilkins Co., Baltimore, 1923.

"blue" and the night message as a "nite." To know such terms helps in establishing points of contact in talking with the workers.

The successful job analysts keep the men informed as to the purpose of their work. They talk freely about the use of the material in working out training programs, or how the items that make up the job can be evaluated by a salary adjustment committee. In fact, this is one of the successful ways of getting the men to talk. Each one likes to feel that his particular work is the keystone that holds up the arch. If the job analyst can convince the man that the facts he gathers will be put to some practical use he will make his work easier and more effective. The men are averse to the presence of non-producers—"dead heads," as they call them. They feel that each man in the concern should carry his own weight. In most cases this attitude is not expressed openly. The cooperation of the men will be in proportion to their understanding of the work and purpose of the job analyst.

The man on the job may have the required physical qualifications for the work for which he is engaged. Yet, he is a relatively unknown quantity. In the first place, his "mental set," his reaction to the job, is different from his reaction to the employment office situation. The job represents a long-time test. Any measures of his abilities in the employment office are necessarily of short duration. We are all familiar with the men who show up brilliantly in the interview, and who fail miserably at work. The man is a bundle of mental and physical traits, just as his machine is an aggregation of parts. But, with this difference: the machine is relatively static; the man changes from hour to hour, and from day to day.

The Psychological Aspect of Job Analysis. The time has come for a frank recognition of the psychological aspect of job analysis. It has been demonstrated that the objective factors of the job—the tools, material, equipment, light, heat, ventilation, etc.—can be itemized and organized in an efficient manner. This requires care, but the technique is not difficult to learn or operate. One may do all this and still not touch the crux of the problem—the man on the job. As an individual he may have been selected carefully for his work. In a modern industrial plant he may represent the one successful applicant out of twenty.

Job analysts who attempt to take the psychological factors of their work into consideration must adopt the clinical viewpoint. The clinical viewpoint in job analysis begins where the old technique leaves off. It studies the worker as he functions on the job. Gilbreth was aware of the possibilities of this technique.¹ Some splendid work has been done in this direction by a few sales executives who have sent out trained assistants with their men in order to discover and analyze the traits and practices that make for successful selling. As promising as this work is, it has not presented us with a thorough technique for the analysis of an individual worker. It is still possible to itemize the traits a man possesses without giving even a glimpse of his real

¹ GILBRETH, F. B., and L. M. GILBRETH, "Fatigue Study: The Elimination of Humanity's Greatest Unnecessary Waste; A First Step in Motion Study," 2d ed. The Macmillan Company, New York, 1919.

personality.¹ It is necessary to know what "drives" him, what motivates him, in order to begin to explain the pattern of his activities. Two men, working with approximately equal efficiency, may be motivated differently. One may need to support a family, while the other is interested in accumulating enough to purchase a railroad ticket to a distant point.

Job-analysis data should yield material that will enable management to create more favorable working relationships between the tools and materials which it supplies and the strength and skills which the man brings to his work. It is essential to know *what* a man does on a job; it is of equal importance to know *why* he behaves as he does. A job-analysis study is only half completed if it is stopped when a check list of duties is prepared, and a description of working conditions is written. We need to supplement such data by studies of the man himself.

A worker engaged in making machine parts requiring great precision, or a clerk keeping office records, may be provided with practically ideal working conditions. He may have excellent supervision. Yet the work may not be progressing smoothly because the worker is handicapped by defective vision, poor motor coordination, worry, lack of interest in the job in hand, mental deterioration resulting from the effects of an insidious disease, or a host of other factors. Only the study of the man himself will unearth such causes. And only such a study will make job-analysis data meaningful.

The physical and mental inventory of the man should follow the listing of duties and difficulties. A thorough physical examination should be supplemented by a careful psychological inventory, designed to show the worker's intellectual level, his degree of trade skill, his range of interest, and his emotional maturity. Data of that type will be of immediate value in revealing the difficulties that are inherent in the man, rather than in his tools and working conditions. Of more far-reaching significance will be the use of such information in future selection of new workers. Then scientific data, rather than unchecked opinion, will be available to answer the question, What are the physical and mental characteristics of our best men for a given job? The job of the employment office is to pick future workers who are most like the best of the known group.

In the final analysis, it is not management, but the man on the job, who determines how well a piece of work is to be done. The study of his duties will throw some light on his problems and difficulties. The study of the man will aid in determining whether he is capable of doing things differently. If he is untrained, he can be taught; if he is physically or mentally defective, he can be replaced by some one who has the necessary equipment for the work that has to be done.

The Value of Determining Significant Character Traits. The job analyst might well concern himself with the temperamental make-up of the men who require frequent medical care, due either to minor injuries received on the job, or other physical disability. Today we have practically no data

¹ ALLPORT, GORDON W., "The Study of the Undivided Personality," *The Journal of Abnormal Psychology and Social Psychology*, vol. 19, pp. 132-141, July-September, 1924.

that would help in isolating those individuals who tend to break down when high pressure methods are applied. Also, in times of industrial disturbance, the emotional factors involved are of tremendous importance. Take, for example, the normally satisfactory worker who is approached by the labor leader who is aggressive and who has perfect confidence in his ability to sway the opinions of men. Suppose this leader has plenty of "drive" and that he is able to handle complex situations quickly and successfully. If the worker is suggestible, with little drive, and of a class that may be characterized as "emotionally immature," he is as putty in the hands of the leader. If such men are at all common in the plant the possibilities of industrial disturbance are multiplied.

The psychological approach to the problem of job analysis offers unlimited possibilities to the men who are interested in, and trained for, the work. However, the employer who inserts an advertisement for a job analyst with the clinical viewpoint will be disappointed. The men are now being trained in some of our universities. Their real training must, of necessity, take place on the job. The best that the employer can do is to select men interested in the study of the personality of the workers, and then train them in his own plant, holding before them continually the ideal of eventually understanding the drives and traits that serve as the "mainsprings of men."

CHAPTER V

COMPENSATION AND INCENTIVES

WAGES AS INCENTIVES

BY ELLIOTT DUNLAP SMITH, *Professor of Industrial Engineering, Yale University*

The primary distinction between forms of wages lies between paying for the amount of time worked and paying for the amount of work done. This is equally a distinction between remote and immediate¹ incentives. To pay for the amount of work done is to provide an immediate incentive to do as much work as possible. To pay by the month, week, day, or hour provides no immediate financial incentive whatsoever. Under time payments how much the workman does today does not determine how much he will be paid for today's work. Still, time payment is a true financial incentive in the long run. For, how hard the employee works today, and this week, and this year affect what job he will hold in the future and how much he will be paid for that job, and indeed, whether he will hold any job at all.

Time Payments. The simplest form of time rate is the flat rate where all employees doing the same job are paid the same amount regardless of individual merit. The use of flat rates is extensive. One reason for this is the increase of interlocking crews where each worker must keep pace with the others in a carefully timed sequence of operations. In such crews the worker must produce neither more nor less than the standard amount. There is no chance to lag and none to spurt. Often the only incentive to effort desired is an incentive to keep in line—and this is provided by the flat rate backed by the power of discharge.

Another reason for the wide use of flat time rates is because of their value for collective bargaining. So long as any variation in payment is permitted, there is no way of insuring in a wage agreement where between the maximum and minimum the average level of payment will fall. Moreover, once a minimum rate is set by a bargain, even though it may not have been contracted for as a flat rate, since no variation downward is permissible, generally few variations upward are made. Whatever the reason for its use, a flat rate is an incentive to mediocrity—an incentive to attain mediocrity, but because of the deep-seated human yearning for a "fair deal," also an incentive not to exceed it.

Graduated Time Rates. Because of the leveling effect of the flat time rate, graduated time rates are extensively used wherever individual effort and

¹ The use of the word "immediate" by Professor Smith has no reference to Gantt's theory of immediacy—Ed.

attainment is desirable and where bargaining conditions do not interfere. Often graduation in remuneration has been accomplished by combining flat rates for each job with lines of promotion from job to job. Under such a system, while the bargaining advantages of flat rates are retained, there is a substantial financial inducement to do better than the average on the present job in order to be promoted to the higher pay and prestige of the next. A more effective form of financial incentive is brought about when the pay rates within the individual job are also graduated and the amount the workman receives depends upon the production, quality, low waste, or other merits that he displays.

The effectiveness of any form of graduated time payments as an incentive to effort depends more than on any other thing, upon the reliability with which the place of the employee in the wage or job scale is determined. If the employee feels that what pay he gets depends largely on how well he "stands in with the boss," the incentive will be one to propitiate the foreman rather than toward doing better work. If the worker has confidence that the value of his work will be fairly reflected in the amount of his earnings, a graduated time rate becomes an effective inducement to productive effort.

Improving Time Payments as Incentives. Probably the most important steps in improving time payments as financial incentives have therefore been the clearer definition of the reasons for advancement or pay increase, the regularization of pay changes by employment department supervision, and the determination of employee value by accurate records. Records of production have long been widely employed, but recently the technique of rating has developed sufficiently so that ratings of other merits such as quality, versatility, or waste have become reliable. Reliable records and ratings not merely aid management in justly regulating pay, but also make clear to the employee the direct effect of his attainment both upon his remuneration and his standing as a workman, appealing alike to his desires for financial return and for recognition as a worker.

The importance of records and of making the employee aware of his standing and progress removes much of the significance of the distinction often made between "financial" and "non-financial" incentives. Rarely does either stand entirely alone. Always men are paid for their work. Even where flat rates are paid, the hope of promotion to some better job or the fear of losing his job if he falls behind gives to the worker a financial interest in the improvement of his standing, and makes any records a financial as well as a non-financial incentive. Even under the most intensive form of financial incentive, the desire to excel and to gain recognition as an outstanding workman is present and is not destroyed by the fact that the recorded attainment of the worker is also given financial recognition. Piece workers are as proud of their records as high producers as are time workers.

Even with flat time rates, the appeal of the desire to excel and to gain recognition as an outstanding workman is such that skillfully used records may bring striking results. Still, the fact that where flat time rates prevail, one worker gets the same pay as another, regardless of recognized differences in output, causes a patent injustice that goes far to neutralize this appeal. When a properly determined and applied sliding scale of payment is united

with accurate records, however, the non-financial and financial inducements blend, strengthening, not impairing, each other. The value of records of attainment and of financial recognition of degrees of ability are thus largely interdependent.

Payment for Work Done. When the amount which the employee receives each pay day depends directly upon the amount of work he has done, an immediate financial incentive is provided. Before the advent of scientific management, direct payment for results almost universally took the form of straight piece rates. The old piece rates were set either by the hunch of the shop foreman or by a bargain between the union and the company. They were consequently crude and not fairly adjusted to the amount of skill and effort required to make the particular product.

Rate Cutting. The greatest defect in the old piece rate, however, was that the practice of rate cutting was commonly associated with it. Frequently when the employees worked hard for extra earnings and materially increased their pay, the management cut the rate and reduced their future earnings to "a fair day's pay" in spite of the extra effort. Thus, while the piece rate was an immediate incentive to increase output, the fear of rate cutting created a powerful long-run counterincentive to keep production down. Moreover, if any employee, heedless of his individual future, expended exceptional effort in order to increase his present earnings to the maximum, he soon felt the crushing force of social disapprobation against his "killing the rate."

Even where the rates were set by collective bargaining, the employees learned that too high piece rate earnings were not desirable. To a large degree the rates which they were able to secure from their employers depended upon what the average weekly yield of those rates had been in the past. If the weekly earnings under existing piece rates had been above the going wage in the community, the union would have a hard task in bargaining for an increase in or even a retention of the rate. Thus, for one reason or the other, piece rate workers kept their production down. The old piece rate had wasted its substance through riotous cutting.

Effect of Scientific Management. With the coming of scientific management, the same factors that contributed so richly to the improvement of manual technique were applied to the improvement of wage technique and to the restoring of the vitality of direct financial incentives. Conditions and methods were carefully studied and standardized, not merely to make them as efficient as possible, but also to make them as stable as possible. The amount of output which an employee could give when using standard methods under standard conditions was then determined as accurately as possible by time study. A rate thus "scientifically determined" was expected to stand the test of time and was promulgated with the guarantee that it would not be cut unless the method of manufacture was substantially changed. This rendering of the piece rate at once more accurate and secure against cutting, cured many of its former evils.

This development ushered in a host of lesser improvements and modifications. Variety began to appear in the manner in which the financial pressure was applied. The straight piece rate had given a fixed return per piece and

varied neither to mitigate the hardship of the learner nor to stimulate the attainment of a set standard. The newer rates varied in a number of ways for a number of purposes. Taylor advised a differential piece rate that aimed to discourage all but the outstanding workers and to make the reward of outstanding ability strikingly worthwhile. He gave the worker a lower rate of return per piece until a severe "task" had been accomplished in the given time, and after that point he not only increased the rate on all subsequent units produced within the standard time but applied the higher rate retroactively over all that had been produced. If the employee fell short of the allotted task by no matter how narrow a margin, no bonus was forthcoming; if he accomplished it, all that he had done before acquired a new value that made the total increase great. Such a rate not only put a high premium upon exceptional ability and energy in the worker but upon exceptional accuracy in setting the rate. If the task was set too high, the rate would discourage all comers; if it was set too low, the amounts carried home by the worker would soar. It was a courageous investment in scientific accuracy worthy of Taylor, but because of its harshness both upon the worker and management, it was hardly a lead that many would follow.

At the other extreme was the tapering off of the piece payment with each additional unit of output, thus both reducing the risks of rate setting and the strength of the incentive. While such rates, because of their mildness, could be used where standardization and accurate time determination had not been fully accomplished, they had many disadvantages and few advantages as compared to skillfully applied graduated time payments.

Time and Piece Rates. A more fruitful mitigation of the severity of the financial pressure of the straight piece rate is the combination in one form or another of time and piece payment. Because this reduces the amount of the employee's earnings that vary directly in proportion to his output, it reduces on the one hand the management's risk of loss from a mistake in setting the rate, and on the other hand the employee's risk of hardship. While this is, of course, done at the expense of the potency of the immediate financial incentive, the presence of the time rate enables other values than production to be financially recognized. To the same extent that the variation of pay in proportion to output is diminished, the way is opened for rewarding quality, versatility, or other merits. The advantage of this is often great for just as the flat time rate favors mediocrity of output, the piece rate which rewards production only, favors mediocrity of quality.

While efforts have been made to extend exact payment by results to cover quality and waste by providing direct remuneration of these qualities, the difficulty and expense of securing sufficiently accurate measurement of individual attainment per unit of output in regard to these less tangible values have usually proved prohibitive of such measures. In the combined time and piece payment, the long run recognition of quality and similar less tangible values is effectively combined with the direct incentive to output which piece payment provides. This form of payment may vary from one where the direct incentive consists merely of the addition of a small bonus for the attainment of a standard output, to carefully worked-out rates where the proportion of time and piece payment has been accurately determined

so as to produce the emphasis desired and where the particular qualities of employee performance recognized by the time rate are carefully defined and measured.

Standard Time Rates. An important advance in the technique of payment for work done is the statement of output in terms of time, instead of in terms of the number of products or operations finished. Each job is given a definite standard time¹ for its performance, and the employee paid so much per standard hour of work done, regardless of the actual time taken. The financial result to the employee is exactly the same as if the work was paid for by the piece, but the whole problem of calculating production is greatly simplified by having all jobs stated in terms of a time unit. Jobs of various sorts can thus be included in a single computation of the standard times involved, the value of which in planning and work room control is self-evident.

Another important characteristic of standard time payment is that dealings and agreements in regard to piece rates can be reduced to the determination of a single factor. For if a rate per standard hour is agreed upon, all the various piece rates that may exist—no matter how numerous or complex—are thereby automatically adjusted to the agreed level. This not merely provides a ready means of rate readjustment but separates the determination of job values from that of the economic value of labor. This separation enables the relative values of present and even future tasks to be based upon scientific determination of the skill and effort involved, while wage levels are effectively controlled by labor agreements. Standard time rates are thus especially adapted for use in collective bargaining.

The simplification brought about by the statement of output in terms of standard time has made possible a combination of graduated time payment with piece payment in such a way that the effectiveness of each form of incentive is almost undiminished by combination with the other. A graduated time rate is used, but the rate is not paid for the number of *chronological* hours actually worked, but for the number of *standard time* hours of work that the employee completes. Under this plan the long run *rate* of payment is determined wholly, not merely partially, by the graduated time rate, while the immediate payment from day to day depends as completely upon the quantity of production turned out as if only piece rates were paid.

Group Rates. The most recent development of piece rates is the group rate. Its essential principle is the teaming of the employees engaged in making a common product into groups and the payment of each individual in the group in direct proportion to the group output. The group piece rate changes the direct financial incentive into a social incentive. Each employee works not for himself but for his group. Upon him, if he lags, falls less individual loss than social disapprobation of a group, all of whom suffer from his decline in output.

The group piece rate is as well adapted to lock-step conformity as the flat time rate, and in addition provides an effective incentive to the members of the group, while keeping step, to quicken their pace. On the other hand, in

¹ This use of the term "standard time" should not be confused with the name of the Westinghouse incentive plan.—Ed.

those groups where individual attainment is desirable, an individual incentive may be provided by combining the group piece rate with graduated individual time rates, or by stating group output in terms of standard time and making the rate paid per standard hour vary in accordance with individual ability. Individual production records may even be kept and used as a basis on which to adjust the time rate that the individual receives. Thus, in one way or another the group rate may be combined with recognition of the individual.

Group payment permits of the elimination of much of the handling inspection, and counting between operations, which is necessary when employees work and are paid individually thus making a substantial saving. The greatest merit of the group rate, however, is neither its economy nor the combining of social with individual financial pressure: it is the transfer of employee interest and attention from individual attainment to cooperative output. Through the incentive of common interest, the employees where group rates have been installed have developed ways of cooperation that have brought about economies and improvements, and led to increases in output as surprising to themselves as unforeseen by the management. On the other hand, when group rates are used where the method of production is individual and the work of one employee is not directly related to that of another, the inducement to cooperative output is of no value, while the putting of the employee's individual earnings into the common pot dilutes the potency of the individual incentive. Group rates are only adapted to integrated production units.

This last step in the development of financial incentives indicates not only how effectively the financial motive may be combined with the other powerful human motives in bringing about effort, but also how the financial motive may be utilized to arouse and direct upon the job such forces as cooperative interest.

Which Is Best? These, roughly, are the major types of financial incentives in use today. The number of possible—nay, almost of actual—minor variations are endless. It is impossible to say which is best. None is universally superior. As far as I know, none is wholly satisfactory anywhere. There is always room for improvement.

It is unsafe to install any ready-made scheme without careful study of its fitness to the local situation, no matter how many endorsements it may have from satisfied users. Because of the nature of the product, of the methods, of the management, of the employees, even of the community, what suits one plant well and proves eminently successful there may fail in another.

Figures of output or costs "before and after taking," moreover, are not accurate evidence of the value of an incentive plan even in the shop where the figures were obtained. Too many other variables exist; too many other things are likely to have changed while the incentive is being installed and operated. Out of the studies incident to installing any form of direct financial incentive, for example, striking improvements in methods, in conditions and control are likely to have resulted which will show savings entirely regardless of whether the incentive itself has produced results. Besides, care must be taken to distinguish the first results obtained under the interest and attention

a new experiment enlists, from those obtained after the plan has become an old story and its inherent defects have had time to make themselves felt.

Even within one factory, varying conditions may make time rates desirable in one place, time and piece rates in another, Taylor differentials in a third, or some form of group payment in a fourth. Financial incentives have such a variety of forms and influences, and are so affected by conditions that the entire local situation must be carefully studied and the incentive plan carefully adapted to it. Are we primarily concerned with output and content with mediocre quality? Or are we more concerned with quality, waste or some other element? Do we want individual attainment or the keeping of a group in step? Is the problem one where the group as a whole can make a common contribution if made aware of a common interest? Do we desire an intense incentive to reach a certain level, or a general incentive to continue to go as high as possible? How effectively have we been able to standardize? How accurately are we able to measure performance? What human motives can we most effectively appeal to? How much expense does the size and nature of the problem justify? What form of incentive is best suited to the product, the methods, the equipment, the employees, and the management?

Out of the study of such questions and experience with cautious, well-planned initial measures, a plan of incentives can be developed in conformity with the contours of the shop. Such development usually takes time, if only for each of its various steps to season before taking the next. Such a plan should always be considered "in process." Certainly in industry where perfection is so unattainable, and change so unforeseeable, a manager courts trouble if he accepts a plan of human motivation ready-made and then, because he has done so, assumes that it is final and requires no further modification.

Some General Principles. While no form of financial incentive can be unqualifiedly endorsed or condemned, certain principles apply to the problem generally.

1. *The effectiveness of any form of financial incentive depends largely upon the reliability and precision of the measurement of employee skill and effort and the faithfulness with which these measurements are followed as a basis of payment, or of promotion and discharge.* Accurate measurement and recording of attainment are so vital to the effectiveness of an incentive that even flat time rates can thereby be given a vigorous incentive value and graduated time rates given a direct incentive power close to that of piece rates. On the other hand, unless direct payment by results is based upon accurate measurement and recognition it becomes an unjust instrument likely to lead to disaster.

2. *The introduction of direct payment by results, therefore, must follow, not precede the establishment of precise managerial control.* If shop conditions are not standardized so that the amount of effort per unit of output is roughly constant, to introduce production payment is to base a variable reward upon conditions beyond the employee's control. This, on the one hand, will lead to constant complaints and exceptions, and on the other hand to discouragement. No step in the introduction of direct payment by results is more important than discovering in advance as nearly as possible the ideal "one

best way," and then seeing that conditions are maintained at that standard. Until this is done, a carefully administered graduated time rate is a far more effective incentive than a premature attempt at direct payment for work done.

This requirement of standardization, while often an impediment to the introduction of piece payment, is equally often a powerful incentive to management. A company may be as much benefited by the improvements in equipment, materials and methods brought about by the studies preliminary to any scientific introduction of piece rates and maintained under constant pressure from the employees to whose work these rates have been applied, as by the effect of the piece rate incentive in bringing about greater employee effort.

3. *A rate must be set with extremely accurate knowledge of what the employees will later be able to perform and based on scientifically perfected methods, to stand the test of time.* Since the one best way is a dynamic, not a static factor, no matter how much care was taken at the start, in time, gradual improvements in method, material and equipment will usually occur. Earnings will then rise out of all proportion to increased employee skill and effort. Although the change may overall have involved substantial expense, if the development was gradual no single striking change of method will exist to point to as a basis of setting a new rate. The management will thus be faced with the dilemma of having either to pay excessive rates or to "cut rates." Because unforeseeable gradual improvements in methods and working conditions are especially likely to result from operating experience with newly standardized processes, even where careful standardization and rate setting has been done it is often wise in regard to processes where rates have never been applied before to allow rate figures to "season" as time payment records before giving them the rigid finality of established piece rates.

This problem of adjusting rates to gradual improvements of process and conditions, is one of the most baffling problems of handling financial incentives. So far as I can discover, no satisfactory answer to it has been found. The problem is serious at best—if rates have been hastily installed without first standardising conditions as far as possible, it is ruinous.

4. *A financial incentive forfeits much of its power if it is too complicated to be readily understood by the employees.* Regardless of the accuracy of reward of merit, it is only as the employees believe that remuneration varies in accordance with skill and effort that wages have an incentive value. In general, it is unwise to count on employee belief being so firmly supported by faith in the management that it will extend far beyond employee understanding.

5. *In introducing financial incentives one should always count the cost.* Often conditions are such that the exact knowledge of daily output necessary for direct payment by results cannot be obtained without disproportionate expense. This has been most conspicuously true of the expense of inspecting after each operation and of figuring quality ratings in those few places where direct quality incentives have been attempted. There are many places where the difficulty or the expense of standardization and of exact measurement of results are so great that time payments in one form or another are far better than any form of piece payment. Even with time payments and

non-financial incentives it is easily possible to carry record making or other measures to the point of unjustifiable expense. The establishment of an incentive plan, no matter how ideal, is never an end in itself.

6. *In considering any financial incentive, its effect on the whole problem of production, not just upon output, must be considered.* To an embarrassing degree an incentive on one element of an employee's value tends to a slighting of others. If we put a variable rate on output only, for example, we cannot expect the worker to maintain an equivalent interest in improving quality. Again as the differences between group and individual rates indicate, if we pay for individual productivity only, we must not be surprised if the individual fails to embrace opportunities for cooperative action. No form of immediate financial incentive adjusts the pressure of financial interest uniformly. In each case one must ponder the various values it is desired to stimulate, choosing those forms of incentive which emphasize those qualities of most importance in the circumstances, and then seek to offset any undue emphasis by other means such as especially careful supervision in regard to those merits not recognized by the incentive plan.

7. *The financial desire is not the only great force in men.* The employee's whole range of fundamental desires must be recognized. His desires for self-respect, for respect of others, for self-expression and for justice for example as well as for pay are all powerful forces within him. His fears of social pressure, of loss of job or prestige, and of injury or unemployment are likewise fundamental factors. How the working out of the financial incentive affects these forces is always a pertinent question, for we do not apply incentives to an isolated pecuniary desire but to the whole man.

8. *When all is said and done, much of the best value of an employee is too intangible for measurement and reward and, therefore, for stimulation by any form of financial incentive, even the time rate.* Men are too complex and too individual ever to be reduced to slot machines whose entire effort can be compelled by the insertion of a coin or by measurement and recognition. Valuable as financial and non-financial incentives are, their limitations must not be overlooked. Primary among these is the fact that they do not reach the invaluable voluntary cooperation and effort which each workman can give but cannot be forced to give. Such effort arises, not from response to inducements, but from love of his work and loyalty to leadership.

Conclusion. The problem of using wages as production incentives can only be successfully dealt with as an integral part of the larger problem of management. The amount of effort which employees put into their work is influenced by other things besides the desire for pay or the fear of discharge. Besides, employee productivity is as much dependent upon facilities, materials, methods, working conditions, and other factors controlled by management as upon employee effort. To use financial incentives successfully, they must not be treated apart from these other forces that influence men's desire to work or that make their working efforts effective.

Incentives are, therefore, an integral element in management not a substitute for it. Indeed, since the more precise and direct the financial incentive employed, the more highly developed must the management be to cope with it, they make management more difficult, as do most advances in managerial

technique. But they also make a higher degree of management possible. If they are suited to conditions, if they are made part of the general structure of control, if they are employed by an understanding management that realizes their nature and its responsibility, and if they are recognized as only one element among the forces that influence employee effort, they can join with the other forces inducing effort and bring out a response that could be secured in no other way.

If they are properly employed, financial incentives are not a means of reducing man to a mercenary mechanism. The character of an incentive and of what it conduces to, depends less upon its form than upon the character and purpose of the organization of which it is an element.

NON-FINANCIAL INCENTIVES

By ROBERT B. WOLF, *Manager, Pulp Division, Weyerhaeuser Timber Company*

As indicated in the previous paper, the element of financial incentives is always present in some degree, even where work is paid for on a straight time basis. Likewise it is true that few jobs are so dull or uninteresting as not to offer some opportunity to accumulate knowledge, and so the element of non-financial incentives is present when the method of "payment by results" is used. It is necessary, therefore, to define what is meant by non-financial incentives as used in this discussion.

An incentive to increased effort which does not have its origin in a desire for higher monetary reward is a non-financial incentive.

If this definition is accepted it is obvious that the field for the operation of non-financial incentives is not necessarily confined to industries where the method of compensation is mainly based upon payment for the amount of time worked.

It has been my experience, as related in previous papers,¹ that where effective non-financial incentives are used better results can be obtained by avoiding the use of direct payment for quantity of work done. It has also been my experience that avoiding the use of financial incentives tends to simplify management problems instead of making them more complicated. In the previous chapter it has been pointed out that the use of economic pressure makes management more difficult and it may well be that payment for time worked, coupled with intelligent stimulation of those other qualities which grow out of voluntary cooperative effort, will greatly simplify the problems of management. Where financial incentives are the principal means used to spur men to greater effort the necessity for continuously creating more potent devices for stimulating the acquisitive instincts of the workers is always present and troublesome. But perhaps the most prolific sources from which difficulties arise to baffle executives are the problems growing out of

¹ "Non-financial Incentives," American Society of Mechanical Engineers, New York, 1918; "The Creative Workman," Technical Association of the Pulp and Paper Industry, New York, 1927.

the need constantly to readjust unit rates which have gotten so out of line with payment for other work that reductions in rates have to be made. Such reductions almost invariably cause discontent and produce antagonistic human emotions.

As one of the most important functions of the executives is preventing the introduction of frictions which come from conflicting human emotions, it is easy to understand why the use of financial incentives makes management more difficult.

When we work intelligently with the chemical and physical laws of materials in our industrial processes we obtain results with less difficulty. If our difficulties increase we know we are out of harmony with *natural* law. It must be equally true that if we work in harmony with the laws of *human* nature we will make management less difficult, and less difficult it must become if the science of management is ever to provide the foundation for an art of management the practice of which will be pleasure instead of drudgery.

The definition given of non-financial incentives makes it necessary to confine this discussion to the use of incentives which appeal to the creative rather than to the acquisitive instincts of men and this necessitates starting with some conception of the nature of man's creative power and how it normally seeks expression.

The word "man" comes from a Sanscrit root which, in common with such words as month and moon, implies the idea of measurement; and the evidence seems to indicate that man was created for the express purpose of enabling the creative process to take place upon a higher plane than was possible by the generic process alone. In other words, in man the universal creative process is focused in a *single* organism instead of in a genera or type, as in the animal; and therefore individual men, who *are* these focal centers, are conscious of themselves as separate from the rest of creation, and each seeks to comprehend the meaning of the life which surrounds him. This he does by first observing, then recording his observations,¹ and finally by studying the records in order to comprehend the natural law operating within the phenomena he is observing. To illustrate: the savage who wished to cross a body of water too wide for him to swim built a raft, because wood, which is lighter than water, floats upon the surface. In the course of time he discovered that the solid wood forming the heart of the log could be replaced by something useful. Later ships were built of many logs, until finally the law was formulated that anything will float which, bulk for bulk, is lighter than the liquid displaced. Today the ships of the world are built of iron (a thing the old shipbuilders declared impossible) by creating special conditions for the floating of a metal that would naturally sink, because iron, bulk for bulk, is heavier than the water it displaces.

It is difficult, but not impossible, to imagine any other sequence of creative evolution than that which has taken place upon the earth. The mineral,

¹ This recording, in the beginning, was a simple memory process, later a word of mouth tradition, and still later evolved into the written word and symbolism of the graphic arts, through which the significance of events within a particular natural phenomenon could be apprehended.

vegetable, and animal evolutions, each with its own functions, and therefore with its own laws, preceded the human; and it was by virtue of logical necessity that man's major function should have been what it is, namely *the creation of new forms from preexisting substances by consciously working in harmony with the laws inherent in the natures of these substances.*

From the foregoing it is apparent that the amount, quality and value of man's creative power is directly dependent upon his ability and capacity to accumulate knowledge, and the skill he develops in using this knowledge wisely, *i.e.*, in harmony with universal law.

In industry, therefore, the problem is to develop a science and art of measuring individual and group accomplishment so that those responsible for the various functional operations can quickly visualize the past in order more intelligently to retard undesirable, and accentuate desirable trends.

Use of Records Measuring Accomplishment. The following is a description of the way records measuring accomplishment were introduced into a paper mill:

The publishers are particular about the weight of the paper. A ream, to be satisfactory, should weigh exactly thirty-two pounds. Paper that is lighter is apt to cause breaks in the pressroom. If it runs heavier, the paper cost per edition will increase. Furthermore, if the paper is very dry it becomes brittle and is apt to break. The dryness, too, prevents the paper from taking a good finish. As a result, the surface will "fuzz" up and fine particles will come off on the printing press and cause trouble by filling up the type and depressions in the cuts.

In the ordinary course of events the publisher sent his complaint in to the sales office, where it was passed on to the manager's office. The matter was then taken up with the superintendent and he passed the "kick" along to the boss machine tender. It finally reached the machine tender, or back tender, or any member of the machine crew who was responsible. This process had to be repeated constantly in order to maintain a uniform quality of paper.

Obviously, therefore, the trouble was due to lack of interest upon the part of the men in charge of the machines in keeping operating conditions as they should be. This lack of interest came largely from a lack of knowledge as to what the conditions actually were. We determined, therefore, that more samples should be taken to give the machine crews accumulative information.

The usual method was for the back tender to take a sample of paper every time a reel was changed, weigh it, and let the machine tender know the result. The machine tender then turned on or shut off stock, according to whether the sample was light or heavy.

A sample from the front, middle, and back of the sheet was taken occasionally but, as a rule, not so often as it should have been taken, largely because the men had not the time.

From previous experience, we knew that the problem was to produce a desire upon the part of the machine crew to get the desired results, so on each shift we put a man (one for every two paper machines) to take samples every time a reel was changed (from the front, middle, and back of the sheet), these samples being weighed and recorded as shown in the reel record (Fig. 1).

In weight of samples columns are shown the weights of the sheet at the front, middle, and back; the top figures being the weights before drying and the bottom figures the weights after drying. From these figures the uniformity record figures are obtained by calling the middle (numerical) weight normal and taking off ten points for each quarter pound lighter or heavier for the other two weights. In the total weight columns, the reel average figures represent the average of the samples from the front, middle, and back of sheet. Figures in weight record columns are obtained by calling 32 pounds per ream 100 and taking off twenty points for each pound above or below 32 pounds. In per cent moisture columns, the three figures in the first column show the actual per cent moisture in samples; the second column, the average of these samples; and the third column, the accumulative shift average. Figures in moisture record columns are obtained by calling 8 per cent moisture 100 and deducting twenty-five points for each per cent above or below 8 per cent. Pop test shows the strength of the sheet; the first column by samples, second column the average of these samples, and the third column the accumulative shift average.

These forms were kept in the machine room, at the end of the paper machines. While the sample testers were instructed in the work by the research department, they were controlled by the boss machine tenders and were largely recruited from the machine crews.

There was no thought in the minds of the men, therefore, that this was a follow-up system, designed to enable the management to find fault with the workmen. They recognized it as a system to help them to get information which they did not have time to get for themselves, and which they needed in order to do their work intelligently. In other words, we were recording the facts which enabled the operators to recognize the natural laws underlying the process.

The suggestions regarding the moisture test (in addition to the weight) came from the international president of the Paper Makers Union. It proved to be a great help, for previously the only way the back tender could tell anything about the moisture content of the sheet was to "feel" it as it passed from the calender stack to the reel.

Of course, no record could be made of this feel to enable the back tender to tell how well his work was being done, so there was no particular reason why he should have been interested in this part of his work. It is only the exceptional man who has imagination enough to create within himself a consciousness of his progress.

The progressive improvements, shown in the charts in Figs. 2, 3, and 4, indicate clearly the increasing interest in the work and how completely the man became master of the machine. That this improvement was due to increasing interest alone is borne out by the fact that we did not pay a man more money for a good record, but paid the prevailing union scale for all positions. These were adjusted each Spring by joint conferences with the men. In this way we kept a proper wage balance between the different classes of work in proportion to the skill required, and as a consequence avoided all the innumerable difficulties which confront the piece-work system, task and bonus plans, and other direct-payment methods.

KEEL K E U K U

TOUR NO. 1				MACHINE NO. 1				MACHINE TENDER WHITE				DATE Oct. 15				1917			
TIME	REEL	ROLLS		WEIGHT OF SAMPLES			TOTAL WEIGHT	WEIGHT RECORD		PER CENT MOISTURE		MOISTURE RECORD		POP TEST					
		NO.	SIZE	CHRT	1	2		3	REEL AVERAGE	AVERAGE FOR DAY	REEL	AVE	ROLL	AVE	REEL	AVE	TEST	REEL	AVE
8 20	1	30.0	90.0	60.0	30.75	20.00	28.75	295.0	50.0	7.3	6.5	50.0	62.5	67.5	37	35	35	35	35
					28.50	27.50	27.00			295.0	6.2									6.5	6.5	62.5	34	35
9 00	2	70.0	60.0	65.0	33.25	32.50	34.75	33.33	14.0	8.3	8.0	62.0	100.0	100.0	41	38	38	38	38
					30.50	30.00	31.50			62.83	7.1									14.5	72	162.5	81.2	40	73
9 40	3	70.0	100.0	85.0	30.75	30.00	30.00	30.25	66.0	3.1	6.4	190.0	600	600	30	32	32	32	32
					28.00	28.00	28.00			93.08	3.102									7.0	222.5	74.2	34	105
10 20	4	100.0	50.0	75.0	30.25	29.00	30.25	29.83	56.0	6.6	5.9	63.3	47.5	47.5	34	33	33	33	33
					28.25	27.50	28.50			122.91	3.073									6.7	209	7.0	222.5	74.2	34	105
11 05	5	70.0	90.0	80.0	31.75	30.75	31.00	31.17	84.0	6.3	5.9	70.3	47.5	47.5	33	32	32	32	32
					30.00	29.75	29.50			154.08	4.8									32.7	6.5	317.5	63.5	32	170
11 45	6	50.0	80.0	65.0	32.50	31.25	30.75	31.50	92.0	6.0	6.1	422.0	52.5	52.5	36	33	33	33	33
					30.75	29.50	29.00			185.58	6.6									38.8	6.5	370.0	61.7	29	203
12 25	7	100.0	50.0	75.0	32.25	31.00	32.25	31.83	96.0	7.0	7.4	310.6	85.0	85.0	31	23	23	23	23
					30.00	28.50	30.00			217.41	8.1									46.2	6.6	455.0	65.0	30	234
1 00	8	90.0	80.0	85.0	31.75	31.00	31.50	31.42	88.0	7.1	6.6	606.0	65.0	65.0	34	32	32	32	32
					29.50	29.00	28.50			248.83	6.9									57.8	6.6	520.0	65.0	30	266
1 40	9	70.0	80.0	75.0	30.25	30.75	30.50	30.50	70.0	5.8	6.5	310.4	62.5	62.5	30	31	31	31	31
					28.50	28.50	28.50			27.983	7.5									59.3	6.6	582.5	64.7	33	297
2 20	10	70.0	80.0	75.0	32.25	31.50	32.00	32.08	98.0	6.4	6.5	774.0	62.5	62.5	34	33	33	33	33
					30.50	29.50	30.00			311.41	6.9									65.8	6.6	645.0	64.5	30	330
2 55	11	90.0	90.0	90.0	33.25	32.00	32.50	32.58	88.0	8.3	7.4	862.0	85.0	85.0	37	31	31	31	31
					30.50	29.75	30.25			343.99	6.9									73.2	6.7	730.0	66.4	30	361
3 30	12	60.0	90.0	75.0	31.75	30.50	30.75	31.00	80.0	6.2	5.9	942.0	47.5	47.5	32	35	35	35	35
					28.75	28.75	28.00			374.99	5.7									79.1	6.6	777.5	64.8	38	396
	13	TOTAL		905.0															
		AVE.		75.4															

FIG. 1.

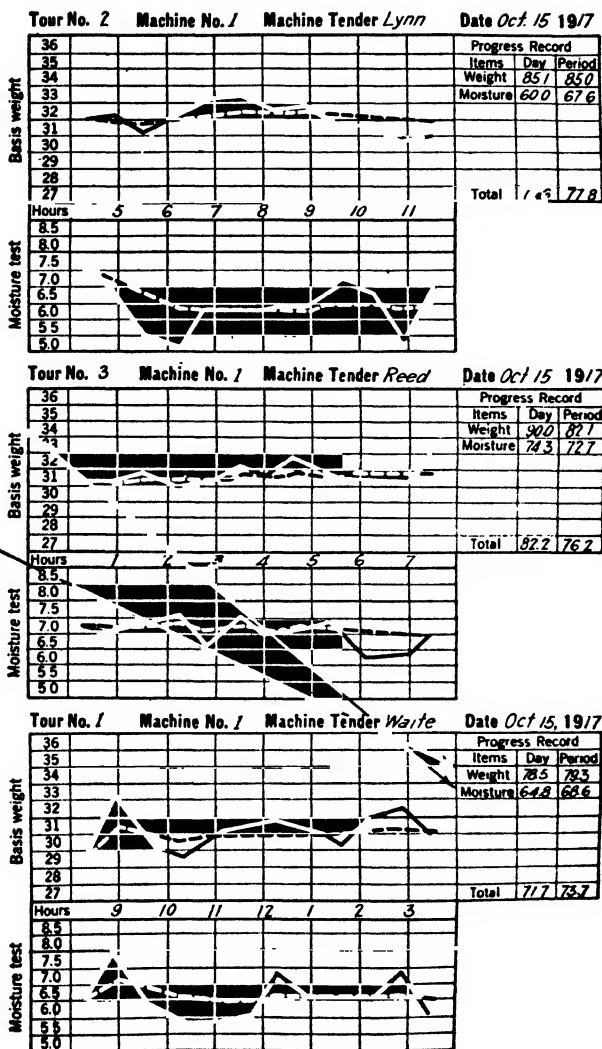


FIG. 2.

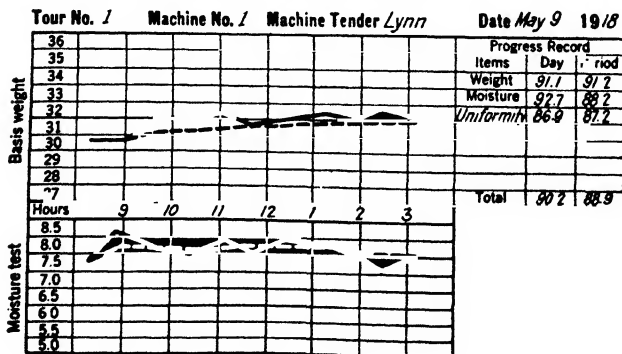
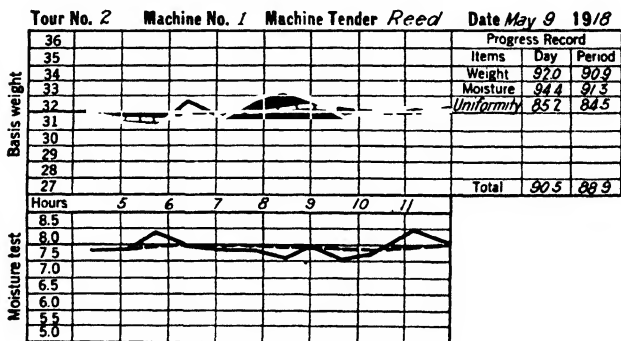
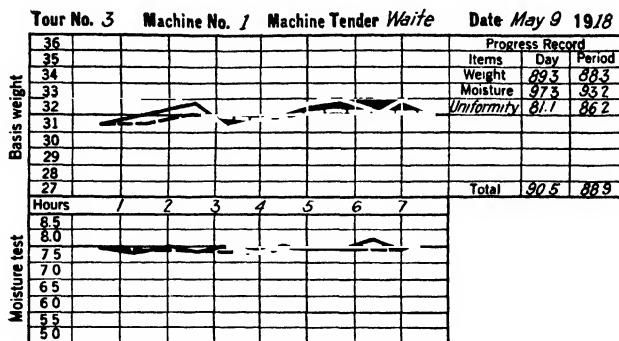


FIG. 3.

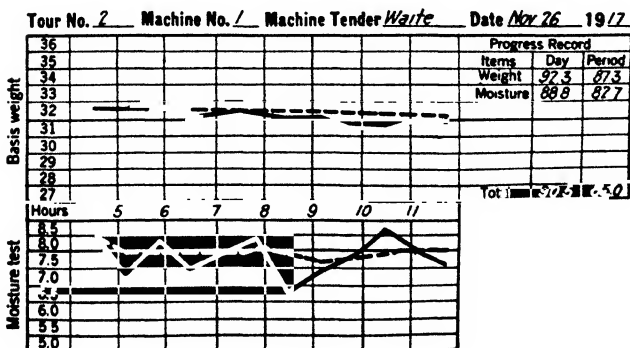
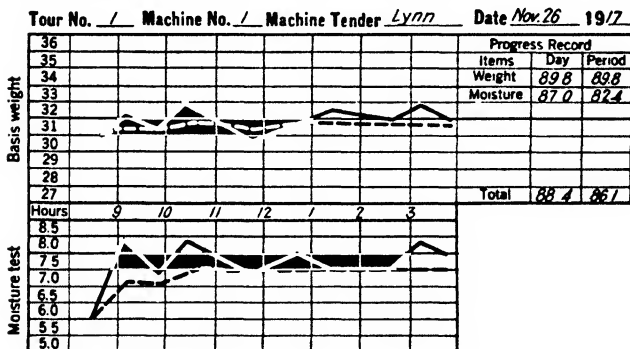
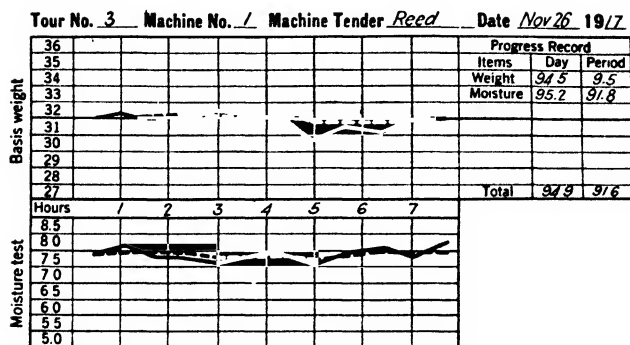


FIG. 4.

It is often argued that it is not right to pay a good man the same rate as a poor man and with this I agree; but the fact is that when these progress records are furnished to men, all men in a certain operating class finally come to be practically equal in performance and the difference will be only between the amount of skill required in each different class of work. And in these *classes* there is a difference in compensation.

Invariably the competition was keen enough on all quality records to bring nearly all the men (who had been at the work a sufficient length of time to become expert) practically to the same degree of proficiency.

The period was four weeks and the average to date began all over again at the end of each four weeks' period. The reason for indicating the standing of the men on a period average, rather than the day's average, is that it tends toward greater continuity of effort, which in itself is a source of much greater satisfaction to the workman. It is the steady progress that really counts and not the spasmodic, spectacular high record for any one day. The record, to give joy to the worker, must reflect the constant steady inner urge which indicates the degree of his mastery of the forces he controls in the day's work.

The "uniformity" record, shown first in the three charts in Fig. 4, came as the result of suggestions from the men, after the weight and moisture records had been in use for some time. We find that the greater number of factors or laws that we record, the greater is the interest in the work, because they bring to bear upon the problem a greater amount of thought.

The "basis weight" and "moisture test" records had been operating only a short time when the machine tenders called our attention to the fact that they could get better results if the stock consistency furnished them by the beater room were more uniform. They asked us to find a way to measure the consistency of the stock, so that the beater engineer could do his work better.

As a result of this suggestion and after discussing the matter with the beater engineers, the research department tackled the problem of measuring this stock thickness. The beater engineer pointed out the fact that the consistence of the stock which was furnished to his department by the sulphite pulp mill and ground wood mill, was not uniform and that we should find some way of recording the consistency at these points.

We found that to do this we had to increase the amount of agitation in the pulp storage tanks and, as a result, made some radical improvements, which produced greater uniformity throughout the entire process.

Right here it might be well to call attention to the fact that our experience has been that men do not have to be stimulated to make suggestions by offering prizes. They are glad to suggest improvements, for in this way they are helping to create conditions in the plant which help them to get better results (the results being indicated by their progress records). Then, too, they were certain to receive recognition for their suggestions, for the foreman knew he would be judged by how well he succeeded in getting his men to use their brains. He naturally hastened to give credit for all suggestions made.

Of course, it goes without saying that this greater uniformity is bound to result not only in a better quality of paper, but in increased output as well; in fact, in one mill, an increased output of over 5 per cent was quickly obtained.

We further made the discovery that what is called the "slowness" or "freeness" of the stock had quite a bearing on the quality of the paper as it came off the paper machines, and as a result we adopted a method which recorded the slowness and freeness. By free stock I mean stock that the water leaves rapidly, and by slow stock a stock which the water leaves slowly. We found, incidentally, that this slowness and freeness is one of the best indexes of the quality of the groundwood pulp, and we developed a series of factors which recorded the operations of the grinders upon which the wood blocks are reduced to pulp.

This work had always been one of the most uninteresting and monotonous jobs in the plant, but it was converted into an interesting operation.

Kinds of Progress Records. Progress records can be grouped into three general classes: *quantity* records, *quality* records, and *economy* records.

Quality records are, perhaps, of the greatest importance, for they bring the individual's intelligence (brain power) to bear upon the problem; and, as a consequence, by removing the obstacles to uniformity of quality, remove at the same time the obstructions to increased output. The creative power of the human mind is, however, not content simply to produce the best quality under existing conditions of plant operations. So the desire to create new conditions for the more highly specialized working out of the natural laws of the process demands expression, and this expression at once takes the form of suggestions for improvements in mechanical devices.

This desire contains within it the germ of economic thought, which will unfold and express itself eventually in a request for cost records, and the organization that neglects its opportunity to satisfy this desire is overlooking one of the great avenues leading toward intelligent productive effort.

Because of the interrelation of quality, quantity, and economy records, any complete record of individual progress must, of course, take them all into account. However, this is not always practical, but at least one of three ways of measuring progress is always open.

Necessity of Using Individual Records. As further illustrating the necessity for giving individual records to the men, we discovered that the back tenders, who sometimes worked on other shifts than their regular ones, lost interest in their records to a certain extent when on a different shift. Therefore a request came to keep the back tenders' records separately, so that, no matter what machine tender he worked for, his record would follow him. This was done and the two records of Nov. 29 and May 9, reproduced in Fig. 5, show clearly not only the gains made but the increasing competition for a good record.

Mistakes in records cause a lack of confidence. We overcame this trouble by giving "accuracy" records to the "sample tester." We had the research department check over the number of mistakes made each day in the "reel record" sheets. A perfect score with no mistakes we called 100 per cent; two and one-half points were taken off for every mistake. An average of eight to ten mistakes a day was a common occurrence but almost immediately this changed so that today a mistake is decidedly the exception.

Use of Cost Records. Cost or efficiency records stimulate the greatest interest in work, so I will give examples of their application.

Below is shown a foreman's detail job sheet, which indicates the method we had for giving our maintenance foremen cost records of their work (see Fig. 6).

It was obviously a difficult matter, when dealing with maintenance and construction work, to give quality or quantity records, as the work varied

BACK TENDERS MOISTURE RECORD									
Date <u>Nov. 29 1917</u>									
No.1 Machine					No.2 Machine				
Name	Moisture		Progress Record		Name	Moisture		Progress Record	
	Day	Period	Day	Period		Day	Period	Day	Period
RAOUL	7.9	7.7	94.1	94.2	FRYON	7.7	7.8	92.7	93.1
CLELAND	8.3	7.8	82.7	83.8	DREW	7.4	7.5	81.8	80.2
DOANE	7.9	7.6	89.3	83.5	ALLEN	7.4	7.2	84.2	78.9

BACK TENDERS MOISTURE RECORD									
Date <u>May 9, 1918</u>									
No.1 Machine					No 2 Machine				
Name	Moisture		Progress Record		Name	Moisture		Progress Record	
	Day	Period	Day	Period		Day	Period	Day	Period
RAOUL	80	80	973	955	RAOUL	80	7.9	975	92.1
CLELAND	8.1	7.9	92.7	92.0	DREW	7.9	7.8	95.0	91.9
DOANE	80	7.8	94.4	90.2	FRYON	80	7.8	95.6	91.8

FIG. 5.

so much from day to day, so the only kind of records we could furnish economically were records of cost. The original suggestion to give these records grew out of the fact that we gave to each operating department head a complete cost of operating his department, for which he was held responsible. As soon as he began to realize this responsibility, because all the repair

materials were charged to him, he at once began to make intelligent criticisms of the engineering department, and especially was he critical of the maintenance foreman if he was wasteful in the use of materials. As a result of this, the maintenance foremen asked the master mechanic if they could not have job costs showing how economically they were doing their work, as they had no idea of the value of the materials they were using. The foreman's detail job sheet shown is the result of this request. It will be noted that the

FOREMAN'S DETAIL JOB SHEET	
Job _____	Foreman <u>John Laffin</u> Date <u>1/10/16</u>
Name of job <u>Install 2-35 Hp. Motors on Coarse Screens</u>	
Description _____	<u>in West Mill</u>
<u>Electrical dept. Power Wiring</u>	
Date started _____	Work done _____ Days
Labor cost to date _____	
Material cost to date _____	
Total cost to date _____	
Labor cost yesterday _____	
Material cost yesterday _____	
Total cost yesterday _____	
DETAIL OF MATERIAL USED YESTERDAY	
ITEMS	PRICE
2-1½" Long-turn Elbows,	0.51
4½ Lb. Solder	1.23
4-1½" Type E Condulets	2.02
4-1½" 4 Hole Porcelains	0.64
1- Roll Oiled Lined	0.24
1- Roll Friction Tape	0.11
16- 100 Amp. Terminals	1.66
	\$ 6.41

FIG. 6.—Foreman's job sheet.

job is fully described, the total cost of material and labor to date is given, as well as the cost of labor and material for the previous day. Then below is listed the itemized cost of all materials used. The men soon became educated as to the value of the materials they were using and we noticed a great change in the amount of waste; in fact we had frequent cases where maintenance men would bring scales into the mill to make sure that the storehouse was giving them full measure of materials, and we were soon obliged to get up a system of giving credit for material returned to the storehouse in order to help foremen keep down their job costs. This was in no sense a form of contract system, for all of our maintenance and construction men were paid by the hour and did not receive any more money for doing a job economically.

The following graph shows the concrete results obtained by giving the cost sheets to the department heads and job costs to the maintenance foreman (see Fig. 7).

It will be noted that there was a rapid increase in production from 1908 to 1913, also a rise in repair material used, as well as an increase in the cost of maintenance labor. The fourth curve, showing the amount of material

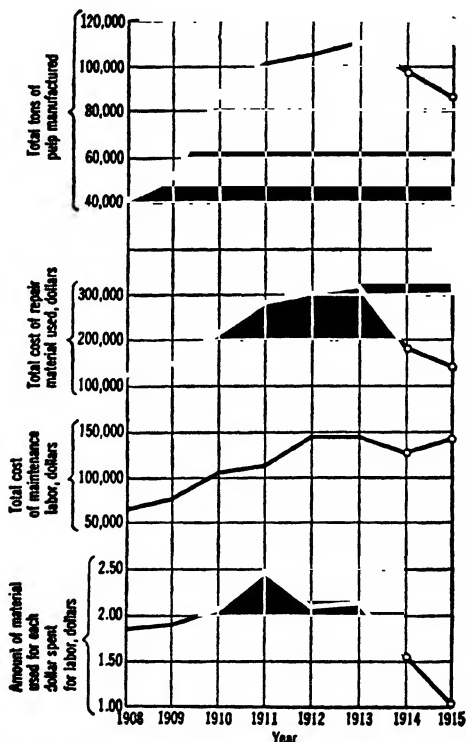


FIG. 7.—Showing concrete results of cost sheets.

used for each dollar spent for maintenance labor, is more or less a resultant of the other two. The gradual rise from 1908 to 1911 in this curve was due to the increased material consuming power of the maintenance men because of the introduction of labor-saving devices, such as pneumatic and electric portable tools. There was a drop in the figures in 1912 and 1913, but we were unable to get a real thought of economy started in the plant until

the departmental cost sheets and job cost sheets were started. These were first put into effect in 1914 and there was an immediate drop in the curve from an average of about \$2.15 worth of material spent for each dollar spent for labor, down to \$1.55 in 1914 and \$1.05 in 1915.

That this drop was due to the greater economy and thought in the use of materials is indicated by the fact that our maintenance crew was not very much reduced, the saving coming almost entirely in the use of materials.

The drop in production in 1914 and 1915 was due to war conditions, which were unavoidable. It is a significant fact, however, that in spite of this drop in production the maintenance material cost per ton of pulp was reduced to approximately one half the amount under the conditions of higher production during the two preceding years.

Increase Not Secured by Use of Bonus. In none of this work did we pay bonuses to a superintendent, department head, or workman; our salaries and wages were high, but payments were all on a monthly, weekly, or hourly basis. The increased effort, therefore, came entirely from a desire within the individual to be productive. Of course this sort of creative effort produced great changes in operating conditions. We increased our yearly production from 42,000 tons to 111,000 tons without adding to the number of digesters for cooking the pulp, or wet machines for handling the finished product, and we changed our quality from the poorest to the very best.

Value of Non-financial Incentives. In conclusion, it should be said that there is nothing essentially difficult about putting non-financial incentives into operation. Conforming, as they do, to normal human instincts, they are not opposed but welcomed by workers.¹ No one can possibly offer objections to being furnished with information; and information furnished regarding progress in increasing production, bettering quality, and lowering cost of output can be furnished, to great advantage, to all individuals responsible, whether be they individual workers, foremen, department heads, or higher executives.

The problem of management is how to increase the number of men who have knowledge of the laws inherent in the materials and processes they are handling, who appreciate the progressive and accumulative effect of their own actions upon the materials and processes for which they are responsible, and who see the relationship of their own work to the finished product and to the organization as a whole.

Managements most successful in solving this problem are making the greatest progress, for in them exists the maximum of coordinated effort.

Finally, relative compensation should be based upon the amount of skill and intelligence required for each type of work. But the inducements and incentives to increased effort are, in the long run, more potent if the separatist acquisitive instincts are not aroused; in other words, if the incentives to increased effort do not have their origin in a desire for increased monetary reward.

¹ I have found this to be true of workmen both inside and outside the trade-union movement.

THE USE OF GROUP INCENTIVES

By C. C. BALDERSTON, *Assistant Professor of Industry, University of Pennsylvania*

Subdivision of labor multiplies the varieties of jobs, but modern methods, such as the use of conveyors, tend to link many of them together again. The resulting interdependence of operations furnishes the chief reason for group incentives. If work is flowing continuously from one worker to another, the speed of the latter depends upon that of the former.

By group incentive is meant financial payment which is based on the combined output of a number of workers. If jobs are closely related, workers in a group can help or hinder each other and the logical basis for a bonus is the performance of all of them. But jobs which are wholly independent of each other call for extra-compensation based on the output of each employee.

By-products of Group Incentives. In addition to the reason cited above, managers who have used group payment have noticed a number of important by-products.¹

It is a spur to cooperative effort rather than individual self-interest.

It is argued that the social pressure within the group encourages slackers to increase output, whereas individual incentives exert pressure upon the rapid workers to "peg" their production.

It offers an inducement for employees to utilize their spare time on another operation performed by the team. When the jobs are arranged progressively along a conveyor, the use of spare moments to help out those who are behind tends to keep the operations in balance even when the rate of production varies.

It stimulates the training of new employees by their fellow workers and the exchange of trade knowledge.

In order to increase the group efficiency, operators assist in planning and supervising their own work.

Where the flow of work is not controlled mechanically, it is speeded up because the output must pass the "payment point" to be counted.

It reduces the clerical costs incident to the payment of incentives by simplifying the counting of the work and the computing of the pay roll.

In the application of group payment, only part of the problems which arise are different from those encountered with individual incentives. Therefore the features which seem to characterize successful plans are for convenience divided into two classes:

Those which are common to both group and individual payment.

Those peculiar to group plans alone.

The following discussion of these problems is necessarily dogmatic because of the limitation of space.

Guiding Principles Common to Group and Individual Incentives. The objectives which it is hoped to attain by the use of incentives will be clearly defined by management, and the plan designed accordingly.

¹ This section, as well as a considerable portion of the remainder, is taken from C. C. Balderston, "Group Incentives," University of Pennsylvania Press, 1930.

The factors which affect output, other than the operator's skill and effort, will be brought under reasonable control by management. (These factors include the steadiness of the flow of work, the size of the lots worked on, the quality and uniformity of the raw material, and the condition of the machines and equipment).

Careful analysis and measurement (time and motion study) to determine uniform tasks or piece rates will precede the use of financial incentives.

Before the selection of any incentive system (or bonus curve) an investigation will be made of its effect at various efficiencies on unit costs and employee earnings.

Reliable records will be available of output of the actual time worked. These records will serve both for the pay-roll computation and as non-financial incentives to stimulate interest in improving performance.

Adequate protection for the workers will be provided to prevent the destruction of morale.

The task time will not be reduced unless the methods and equipment change substantially.

Allowances will be made for unusual events outside the control of the workman which cause the reduction of his earnings.

Problems Peculiar to Group Incentives and Typical Methods of Solution.

The problems which are characteristic of extra-compensation on a group basis may be summarized under the captions below.

1. The composition of the group.
2. The determination of the best unit of work in which to measure output.
3. The research work, or time study, prior to setting the group tasks.
4. The decision as to the level of difficulty at which the tasks are to be set.
5. The relation of extra-compensation to output (i.e., the choice of the earning curve).
6. The distribution of the earnings of the group to its individual members.
7. The protection of the employees against influences affecting their output which are uncontrollable by them.

1. *Composition of the Group.* The key to the most effective formation of groups is the degree to which the individuals can be mutually helpful. This depends partly on the interdependence of the jobs, and partly on the existence of opportunities to aid others by direct assistance during idle moments or by trading information.

The smaller the group the greater is the social pressure and the money stimulus felt by each individual. That the groups be kept small is especially important if a strong incentive is desired. For miscellaneous work, groups of fifteen or twenty men (and not exceeding forty) are favored by many managers. Where the work is highly mechanized, however, the size of the groups may be enlarged both to reduce clerical expense and to throw the attention of the entire force upon the maintenance of the production schedule.

2. *Units of Work.* The questions which must be solved prior to the introduction of incentive payment are of two types: those to be answered by research or investigation; and those to be settled by executive decision.

Perhaps the first of the research problems is to select the unit of work in which the task is to be assigned and actual output measured.

The logical guide to the selection of the unit of output is to determine the real nature of the work done. On an assembly line, the purpose is obviously to put together subassemblies and parts into a final product which will pass inspection, and the unit of work will inevitably be in terms of completed product. But for indirect labor, such as that employed in receiving, shipping, or trucking, the answer is not always so simple. *The unit chosen for counting the output should above all else reflect the effort and time expended.* For example, if the time varies with the weight rather than with the number of pieces handled, then some weight unit like the ton should be used rather than the number of pieces.

In addition to this all-important characteristic, the unit selected for each operation should be definite and capable of objective measurement. Feet, pounds, and number of items are clearly understood, but qualities such as the cleanliness of a department permit many interpretations.

The task may be expressed either in time or money; that is, either in hours per unit of output or in dollars per unit of output. Trivial as this distinction may seem, it is at the center of one of the most debated points in the use of group incentives. When the task is expressed in standard hours, a group incentive plan is usually referred to as "group bonus." But where the task is expressed in dollars, the arrangement is ordinarily called "gang piece work." The chief effect of this distinction is felt in the distribution of the earnings of a team to its constituent members which is discussed in a later paragraph.

3. *Research Work Prior to Setting the Group Tasks.* When the operations are not on a conveyor, the grouping of individual tasks tends to level out variations in the difficulty of their accomplishment. But group payment demands the same careful analysis and precision of measurement which ought to precede the introduction of any incentive. The standardization of operating conditions, the time study and other statistical analysis which are essential to make the tasks of various groups sufficiently uniform are almost identical with the preliminary research needed for individual incentives. There are, however, three important variations.

One unusual problem encountered with group payment is to set a group task for operations which are already performed on a conveyor at the time the incentive is installed. Naturally, the most effective balance of jobs will differ with variations in the design or finish of the product.

A second difficulty is that group incentive makes it both possible and desirable for certain indirect workers to be included in the group if they are in a position to facilitate the work of the direct operators. These indirect operations, however, such as trucking and routine inspection are often of such a nature that they cannot be time studied with the same precision as the repetitive jobs. If they are to be included, however, it is essential that they should be analyzed with extreme care in order that the approximate uniformity of the tasks may not be destroyed.

A third difficulty which is encountered in heterogeneous work (i.e., operations which are similar or related, but which are not identical nor on a conveyor) is to relate all of the task times to a simple unit of output. For example, the work of a group of Elliott-Fisher operators or other clerical workers may

include a percentage of items which are identical and easy to type. In order to use a simple unit of output such as 1,000 items, it is necessary to make a statistical study to discover what percentage of the total items tend to repeat themselves. After the proper task times have been determined both for typing the repeat items, and those which are not repeated, the times can be combined by weighting them according to the distribution found by the statistical study.

The Difficulty at Which the Tasks Are Set. The decision as to the level of difficulty at which the tasks are to be set is not essentially different under group and individual payment. But since the solution must be considered in the light of its psychological effect upon the workers, it must be remembered in the case of group incentives that the efficiency which can be attained by a gang of men is lower than that which can be reached by exceptional individuals. In making the decision as to the level of difficulty, the following factors will need to be considered:

The degree to which close managerial control can be maintained. This, in turn, will depend upon the extent of standardization and will affect the precision with which task times can be set and the amount of protection which is necessary for the workers.

The existing efficiency of the plant and the ability of the management to increase that efficiency before the bonus becomes operative. This will influence the selection of the point at which employees start to earn a bonus.

The judgment of the management as to the psychological effect upon the worker. Some executives believe that workers should "beat" the task rather than fail to reach it. If too high, the tasks may tend to discourage, and if too low, they may not prove a goal to be attained.

The share of the saving in labor cost which will be paid to the workman under the payment system which is adopted.

The Relation of Extra-compensation. In determining the price which the company is willing to pay for additional output (i.e., additional efficiency), the amount of extra pay may be related to output by using any one of a number of so-called "systems." Among those which are employed most often for group incentives are the Wennerlund efficiency scale, used by General Motors; various kinds of standard hour plans, such as that of the Packard Motor Car Company and the Timken Roller Bearing Company; the Bedeaux point principle, used by Swift and Company; and the Rowan premium plan used by the General Electric Company.

The choice of the proper earning curve depends upon the extent of precise control in the plant, the accuracy with which maximum performance can be predicted, and the ability of the management to raise the existing efficiency of the shop before the incentive becomes directly effective. These factors are alike under group and individual incentives except that, under the former, it is especially important that the formula be simple to compute and easy to understand, and that it permit the group earning to be distributed fairly.

Distribution of Earnings of the Group to Its Individual Members. The distinction between so-called group bonus and gang piece work is important because of its influence upon the allocation of the group earnings.

The usual method of allocating gang piece work earnings is to assign separate base rates to each man according to his effort and ability and to apportion the earnings of the gang according to the product of the individual base rate and the actual hours worked on incentive by that individual. After the base rates are multiplied by the hours worked by each man, the sum of these products is divided into the total piece-work earnings of the group. The resulting percentage, if over 100, is then applied to the base-rate earnings of each man.

If the gangs are small in size, this method of apportionment tends to create personnel difficulties because an increase in the base rate of one individual decreases the earnings of all others in the group. Consequently, in groups of twenty or under, the older employees tend to resist the granting of raises to the new members to reward them for improvement.

With a group bonus, however, these personnel difficulties may be avoided. All members of the same group get the same percentage of bonus, but since the percentage is applied to the individual base-rate earnings, which vary with the skill of the operator and his actual working time, the absolute amount of each bonus may be different. The procedure usually followed is to determine the efficiency of the group by dividing the task time by the actual time worked. Then, by locating this percentage of efficiency on the bonus curve, the percentage of bonus to base pay is determined for the period in question. The amount of each individual bonus in dollars is figured by multiplying the individual base rate by the actual hours worked by that employee, and applying to this product the bonus percentage of the group. If an individual's base rate is 50 cents an hour and the actual hours worked by him are fifty, his base-rate earnings are \$25. If the percentage of bonus earned by his group is 20 per cent, the bonus of this individual equals \$5 and his total pay is \$30.

The advantages claimed for this method of distribution are:

That it combines an individual stimulus with the group incentive because the individual base rates can be changed to reflect improvement in effort or ability.

That the base rates can be changed without affecting the task times, and consequently the direct labor costs are sensitive to changes in the labor market.

The Protection of the Employees against Influences Affecting Their Output Which Are Uncontrollable by Them. Since incentives of all kinds depend for their effectiveness upon the psychological reaction in the minds of those who work under them, protection against real or fancied unfairness is vital to the best results. Not only does such protection prevent many grievances, but it is desired for its own sake by managements which believe that an honest attempt to be fair is essential to sound personnel relations.

A precept of management which has been repeated times without number is that, unless the equipment or method is changed substantially, a rate should not be cut, and that if it is cut, the consequences are undesirable. A more specific statement of this rule is that the time allowed to perform an operation will not be reduced unless the operation has changed. Substantial changes in material, equipment, or in the product itself obviously call for the setting of a new task based upon a fresh time study.

In order that the earnings of the group may reflect the combined effort of its members as closely as possible, it is important that these earnings should not be affected too much by variations in material, equipment, working conditions, or the quality demanded. Since the maintenance of the standard conditions for which the task is set is a responsibility of management, most employers protect their workers against failure to maintain them.

The earnings of a group are affected adversely by the introduction of new employees if they are inexperienced and untrained. Executives usually feel that fairness to the old employees demands that they be protected against the reduction in their earnings during the time that new employees are reaching the normal efficiency of the group. The training time varies, of course, with the difficulty of the job and with the experience of those who are hired. Many employers follow the policy of dividing the burden equally between the company and the old employees by carrying new employees on day rates for approximately one-half of the time necessary for the average person to reach normal output. The arrangement in these cases is for the company to pay the new employees on a day-work basis for a given period and to credit their output during this time to the gang.

Basic Principle. It should be emphasized again that incentives ought not to be applied to groups unless the jobs are interrelated. In situations to which they are adapted, they tend to develop teamwork and group spirit rather than individual self-interest. They not only spur the worker to greater accomplishment but insure that his advancement can be secured only as a member of a team, and not as an individual working for his selfish interests alone.

SUGGESTION SYSTEMS

By A. B. GATES, *Director of Training, Eastman Kodak Company*

Suggestion plans have been in use for many years in a variety of types of business organizations. These plans have met with a varying degree of success, and some have been abandoned because of apparent failure. A survey of the causes of success and reasons for failure discloses some of the features that should be embodied, and others that should be omitted, if the plan is to succeed. The purpose common to all suggestion systems seems to have been the provision of a medium through which the employees will be encouraged to submit to the management ideas on possible improvements.

The principal cause of failure in the plans which have not met with success or which have gradually lost the employees' support has been indifference on the part of the employees. This indifference can usually be traced to one or more of the following causes:

- a. Poorly introduced system.
- b. Improperly planned routines.
- c. Lack of interest on the part of management.
- d. Hostility of supervisors.
- e. Delay in considering suggestions.
- f. Insufficient awards.

Purpose of the Suggestion System. Although the system should provide a medium through which the employees may submit ideas on improvements, the idea back of the plan should be a real encouragement to the employees to think about their work and the company's problems. The plan should in reality be an invitation to the employee body to participate in that phase of management which has to do with planning methods and procedures. In this respect, the suggestion plan is similar to an employees' representation plan. That management attitude which will insure the success of a representation plan will also bring success to a suggestion system. Management must be conscientiously and unselfishly interested in the plan if it expects the employees to support it by their effective participation.

Establishment of a Suggestion System. Management should first convince itself that it should establish a suggestion system. By an analysis of the business organization, procedures, and methods, a decision should be reached as to the types of suggestions desired. In general, it has been found that desirable suggestions may be classified into types or groups, among which these are usually included:

Improving engineering, construction, operating, manufacturing, or sales methods.

Improving service to, and relations with, customers.

Improving public relations.

Improving office methods and systems.

Improving tools, appliances, and machinery.

Improving health and working conditions of employees.

Improving safety devices.

Eliminating hazards to life and property.

Eliminating unnecessary work.

Reducing costs.

Preventing waste.

When management has decided that the business operations offer ample opportunity to warrant the establishment of a suggestion system, it should carefully work out all the details of a formal plan. The plan should provide for:

A definite basis of award.

A permanent executive secretary to look after the details and to insure prompt action.

A definite procedure for receiving, acting on, and making awards on meritorious suggestions.

A definite routine for the disposal of unaccepted ideas.

A definite provision as to what classes of employees shall be eligible to awards for suggestions.

A provision to give credit to suggestors if ideas, once rejected, are later put into use.

A provision to insure as nearly uniform valuation of suggestions as possible.

Obtaining the Support of Executive and Supervisory Groups. With the details of the plan completed, the management should first obtain the wholehearted support of the supervisory employees. This can best be done by a thorough dissemination of information about the proposed plan and its purpose to the

executives, subexecutives, and supervisors, prior to its announcement to the employees.

One of the most common causes underlying the lack of support of a suggestion plan on the part of some of the supervisors and executives is the mistaken idea that employees should voluntarily submit any ideas that they may develop as a result of their work, without the necessity of a reward beyond their regular compensation. Another is that the approval of such suggestions is a reflection on the responsible supervisors and executives for not having developed the ideas themselves. Both of these difficulties will undoubtedly be found in almost every organization. In many organizations successfully operating suggestion systems, the first of these problems has been solved by the establishment of the idea throughout the supervisory and executive forces that the employees are, in general, compensated for more or less definitely assigned tasks, and that, through the suggestion system, management is asking the employees to render an extra service to the company, for which the company is willing to pay as it would in the case of extra production of other character. The solution of the second problem is obvious. Two heads are always better than one, and it is a shortsighted policy that induces the employees to withhold from management ideas on possible improvements. Future supervisors and executives will probably be taken from the working force, and any plan that will encourage the employees to think in terms of improved efficiency and methods will greatly enlarge the available material when opportunities for promotion develop, and will make for a more alert supervisory force.

Announcement of the Plan. Following the decision to establish a suggestion system, the management should forward to each department or unit head a complete description of the plan, including instructions regarding its operation. At the same time, by means of a letter to each employee or by bulletin announcements, or by both, the employees must be given complete information as to the purpose and provisions of the plan, including instructions as to methods of submitting suggestions, and of making awards. The announcement to the employees should also include suggestions as to types of ideas on which management desires suggestions.

Organization and Set-up of System. There should be a secretary appointed who will be responsible for the necessary routine to insure prompt action on the disposition of all suggestions submitted. These duties can usually be assigned to a staff employee who can handle this work without interfering with other company routine.

Suggestion Committee. A committee is not necessary to the successful operation of a suggestion system, but in many organizations, the committee plan has met with general approval. As this form of organization is simple in its operation, and as the principles involved can readily be developed, it will be used to discuss the principles, methods, and procedures involved in setting up and operating a suggestion system.

The committee should be under the chairmanship of a major executive. The committee should include in its membership representation of at least each of the major divisions or units or organization such as: engineering, production, research, financial, accounting, and sales. Each member of the

committee should act as sponsor for suggestions having to do with work or methods relating to the unit of the organization which he represents.

Subcommittees. Provision should be made for the appointment of subcommittees to consider suggestions or groups of suggestions when they are received.

Suggestion Blanks or Forms. Suitable blanks or forms should be provided for the use of the employees in making suggestions. These forms should be serially numbered, and each form should carry a detachable stub on which the number of the form should be duplicated. The forms should also carry complete instructions to the employees as to how suggestions should be submitted and how awards will be made.

Suggestion Boxes and Bulletin Boards. At suitable locations throughout the plant and office, bulletin boards should be located for the posting of notices and instructions regarding the operation of the system. Containers for blank forms should also be attached. If company mail is not to be used in submitting suggestions, a box in which the employees can deposit suggestions should be set up as a part of the equipment at each location.

Awards. In most plans, it has been found that cash awards are desirable. In many plans, the minimum award is set at \$5. Some plans provide for a uniform award of \$1 for all accepted suggestions, with provision for additional awards to the individual making the greatest number of accepted suggestions in a given period, and some plans provide for additional awards for the best, second best, and third best suggestions in a given period.

Subsequent Award after Suggestion Is Put into Effect. A quite common provision in the more recently established plans is to make an award on the apparent value of a suggestion and then, after a period of six months or a year, audit the results, and if the suggestion is found to be of greater value than was anticipated, make an additional award.

Other Awards. Some plans provide for a minimum cash award but also provide that, if an idea has merit not sufficient for a cash award, a letter of appreciation may be sent to the suggestor. Still another provision is to award merits which are recorded by the secretary and held by the suggestor until he has received a sufficient number of merits to equal a minimum cash award, or until a cash award is made for another suggestion, when the merits are added, at their cash value, to the cash award. Some plans provide for recognition of the value of accepted suggestions in salary or wage adjustments. The consensus, however, seems to favor cash awards for accepted suggestions.

Operation of System. In many plans, provisions are made to keep the identity of the suggestor secret until disposition has been made of the suggestion. This is not absolutely essential to the success of the plan, but as the trend seems to be toward this method, it will be discussed.

Submission of Suggestions. Suggestions should be made up by the employee on blanks provided. They should be sent to the secretary of the suggestion system by company mail so as to avoid delay caused by depositing them in suggestion boxes. Boxes may be used, however, when all the employees are working at a single location, or when they are concentrated at a few locations.

The suggestor should detach and keep the small identification stub, which carries the serial number of the suggestion form turned in.

Consideration of Suggestions. The secretary should, upon receiving a suggestion, make out file and working copies and, in accordance with the nature of the suggestion, index it for reference purposes. He should then transmit a copy of the suggestion to the member of the suggestion committee who represents the department of the company having jurisdiction over the work to which the suggestion refers. This member of the committee then designates on the form, the members of the subcommittee which is to make a study of the suggestion. The number appointed on the subcommittee may vary from one to several, in accordance with the interests involved in the suggestion. The form is then returned to the secretary who sends copies of the suggestion to each member of the subcommittee and follows up the chairman to insure prompt consideration. The subcommittee meets and, after making any necessary study or investigation, arrives at its decision. The chairman of the subcommittee then writes up the decision, which includes recommendations on kind and amount of award, and returns the suggestion and subcommittee's decision to the sponsor or member of the suggestion committee who appointed the subcommittee. If the sponsor does not agree with the subcommittee's findings, he returns this suggestion for further consideration. If he agrees, he initials the form and returns it to the secretary for formal presentation to the suggestion committee.

Final Action by Suggestion Committee. The suggestion committee meets at regular intervals and in special sessions if necessary because of number or character of suggestions submitted. The secretary presents each suggestion that has been returned by subcommittees, and the suggestion committee may accept the subcommittee's recommendations, may increase the recommended award, or may return the suggestion to the subcommittee for further consideration.

Posting Awards. Immediately following each meeting of the suggestion committee, the secretary prepares a list of suggestions on which a decision has been reached, and has this list posted on all the suggestion bulletin boards. He also publishes the list in the employees' paper or house organ. The lists are made up by serial numbers and indicate the action taken; that is, the amount of award is given in the case of each accepted suggestion, and, if further information is needed, this fact is posted with the suggestion number. This added information may be given to the secretary by telephone or may be submitted in writing, identified by the original suggestion number. This provision makes it possible to obtain additional information without disclosing the identity of the suggestor. This also makes it possible to reach the suggestor whose suggestion may not have been given a cash or merit award, but with whom the committee or secretary may wish to get in touch in order that a misunderstanding or misconception of ideas or conditions may be cleared up.

If an audit of the value of a suggestion results in an additional award, many companies make this additional award at some annual meeting of the employees. This method serves to advertise the suggestion plan and thereby helps to keep up the interest. If the company does not wish to provide for secrecy

as to the identity of a suggestor, the serial numbering system can be omitted, and the suggestor can be identified by his name and department. In many places where the secret system has been in operation, the suggestor has identified himself to his superior or the secretary and in some cases has signed the suggestion form.

If the committee organization does not seem desirable, the secretary can work through the executives heading up the various groups of departments. Many companies, however, have found that the committee form of organization has made the plan more effective. In any case, the attitude of management toward the whole plan is more important than the details of organization or the methods of operation.

CHAPTER VI

SUPERVISION

SUPERVISORS: THEIR QUALIFICATIONS AND SELECTION

BY EDWARD DANA, *General Manager, Boston Elevated Railway*

The topic, Supervisors: Their Qualifications and Selection, is the very starting point of the whole program of improving the quality of the supervisory forces. The two divisions of the topic must be treated separately, although they are of course intimately related. Take first the matter of qualifications; what characteristics are needed in an employee who is under consideration for a supervisory position?

There are two points of view here. The supervisor occupies a unique position, in contact with the workers on one hand and with the management on the other. He needs knowledge of the problems of both and sympathy with their aims and plans. This imposes a double set of requirements upon the supervisor—one from the standpoint of the working force, the other from that of the management.

To be acceptable to the working force the supervisor needs certain qualities which are difficult to tabulate but which may be summed up in term *leadership*. It is not necessary to dissect this term for our present purpose, except to note that men like to follow the leader

1. For whom they have affection.
2. Whom they can trust.
3. Who they feel (and feeling plays a large part here) can help them make the most of themselves.

It must be remembered that the individual worker nowadays works in a narrow groove and cannot see his job in perspective and in relation to the big operation of which it forms a part. One aim of management must be to give him as much general information as he will and can absorb, but the chief reliance for the perspective view which comes from trained leadership must increasingly be the supervisor.

It follows, of course, that the detailed qualities will not necessarily be similar in all leaders, but these qualities must comprehend the elements mentioned and they must produce the desired results.

From the standpoint of the management, the supervisor needs in addition to leadership the *ability to manage*. His duty is to accomplish the purposes of his employer with economy, using that term in its broadest sense. Possibly this qualification is a little easier to analyze than the foregoing. Let us see what are some of its characteristics:

1. A willingness to study the organization as a whole, be it manufactory, public utility, or what not.
2. A capacity for analysis and a sizing-up of the vital problems involved in the functioning of the organization.
3. A desire to cooperate with other executives and to look upon the work of each as part of the whole.
4. A conviction that the supervisor's job is largely one of carrying and discharging responsibility.
5. The ability to get things done, to execute plans, to turn out a finished product acceptable to the customer, whoever he may be.

The determination of these detailed qualifications is not a hit-or-miss task, but one of the fundamental duties of management, too often neglected, with resulting confusion and loss later on. There is some risk of going too far in our classification. We all know the difference between good and bad as relative terms. It is comparatively easy to elaborate upon these terms until we reach such a detail of attributes that rarely would a human being be found who could acceptably meet such requirements.

A comprehensive list of qualities desired in a supervisor was compiled with the aid of the men of this rank in the works of the Westinghouse Electric and Manufacturing Company. The items are segregated under three general heads, as follows:

Personal Qualities. Fairness, tact, honesty, optimism, good health, self-control, enthusiasm, sympathy, dignity, firmness, patience, dependability, open-mindedness, punctuality, frankness, poise, unselfishness, sense of humor, courtesy, broad-mindedness, loyalty.

Managerial Qualities. Initiative, judgment, system, courage, resourcefulness, foresight, power of analysis, self-confidence, alertness, decision, progressiveness, perseverance, imagination, concentration, sense of proportion and values.

Special or Technical Knowledge. Material, equipment, economics of production, time study and rate setting, cost and accounting, inspection methods, first aid.

Selection of Supervisors. Any executive who is responsible for placing men in supervisory positions has in mind certain qualifications needed in men eligible for those positions. These may or may not be definitely formulated, but they are in his mind, nevertheless, or he could make no intelligent selection.

When we have succeeded in setting up a definite list of qualifications for supervisors and proceed to the task of selection, we again must proceed upon the assumption of an efficient management with an eye single to securing the very best results.

What we need to strive for in the selection of supervisors is the elimination of the casual, but oftentimes powerful, factors. Some ambitious employees are such good salesmen (of themselves) that they oversell themselves to their employers. Personal qualities which tend to develop friendship may blind the appointing powers to fatal defects in mental and physical equipment.

It goes without saying that friendship, family connections, and, in the utilities, politics must be completely eliminated if real results are to be secured. Such perfection in management does not exist at the present time, but is

certainly not impossible of attainment. As the increased cost of labor and greater use of machinery become more potent factors in successful organizations the necessity for unprejudiced selection becomes more essential.

So much for what should not be done in selecting supervisors; now for the positive side. It is desirable to get the opinions of several unbiased persons regarding an individual who is under consideration for appointment.

A study of personal qualities in connection with one supervisory grade of employees resulted in the following form for the convenience of men who may be asked to express their opinions regarding the characteristics of these employees (see Table I).

TABLE I

Characteristics	Your estimate					
	Very good	Good	Fair	Poor	Very poor	Remarks
Ability to get cooperation...						
Alertness.....						
Courteousness.....						
Decisiveness.....						
Enthusiasm.....						
Foresight.....						
Initiative.....						
Judgment.....						
Knowledge of his job.....						
Leadership.....						
Loyalty.....						
Open-mindedness.....						
Poise, dignity, self-confidence.....						
Punctuality.....						
Resourcefulness.....						
Self-control.....						
Sense of humor.....						
Sincerity.....						
Tact.....						
Thoroughness.....						
General remarks.....						

Some such aid as this cannot but prove helpful and stimulating. Estimates resulting from its use, when properly weighed, are valuable in supplementing other sources of information.

Suggestions from a large number of employers as to ways in which employees are picked for supervisory positions all reduce to this common denominator:

1. Get the employees interested in any activities which tend to disclose the qualities previously mentioned.

2. Study them in as many different environments as possible.
3. Get the viewpoints of several people as to their qualifications.
4. Rate them systematically to determine which ones have the highest average of all desired qualities.

In addition to the above, examinations and other tests have their place in connection with the selection of supervisors. Objective tests should be more generally used in connection with promotions.

Why should not candidates for promotion to positions of supervisory nature be required to take written or oral examinations, or series of examinations, on questions skillfully framed to bring out, within the limitations of this method of testing, the qualities sought?

Such examinations might be supplemented with simple psychological tests, to the degree that experience shows the results of such tests to be related to subsequent performance.

Reference should also be made to the value of a general educational program as related to the selection of supervisors. One outstanding result of such a program for supervisors and others is that the participants disclose their aptitudes, and their superiors are given an opportunity to study them with a view to giving the supervisors commensurately increased responsibility.

THE FOREMAN AS MANAGER

BY L. A. SYLVESTER, *Engineer, Stevenson, Jordan and Harrison*

Common Faults of Foremen. Many large concerns have been so preoccupied by their rapid growth, by technical changes in the manufacturing processes, and in meeting competition through new designs and new products, that little attention has been given to foremen. It is common, in plants of this kind, to find foremen growing like weeds, and developing faults which have been forced upon them by the conditions under which they have been working.

One frequently meets the foreman who, having had his position jeopardized by production emergencies in the past, always endeavors to carry a surplus of labor. Perhaps it is not entirely conscious with him, but he likes to feel that he has a certain amount of extra labor "to come and go on."

Then there is the foreman who feels that the importance of his job is chiefly reflected by the number of people who work under him. This type of foreman frequently tries to make a mystery out of the work of his department, and by endowing his work with a false difficulty endeavors to make his job seem very important, not only in his own eyes, but in the eyes of his superiors.

Another fault commonly found with foremen is that of being afraid of their subordinates. Owing perhaps to labor difficulties, or doubt as to their ability to handle men, foremen develop a willingness to give employees practically anything they ask for in order to keep them satisfied. The great bug-

boo of such a foreman is that some day he will come in to work and find his important workers absent. Oftentimes this desire to keep employees satisfied at all costs is accompanied by a hesitancy to say no to any question, and frequently such a foreman will pass the buck to the company management on all problems. If an employee asks him for some privilege, instead of refusing the privilege and giving a satisfactory reason for his refusal, he will blame the refusal on company policy, and express disgruntled sympathy with the worker.

Perhaps the commonest of all foremen's faults is that of being too easily discouraged or turned down by their superiors. Suppose, for instance, that a foreman presents some problem to his superintendent at a time when the superintendent is preoccupied with some other matter, and the superintendent, without very careful thought, disagrees with the foreman's viewpoint. Instead of realizing the situation, the foreman is completely discouraged by such action.

It is quite common for foremen to regard their jobs purely as a series of troubles and fail almost entirely to see the importance or creative side of the work. Foremen are so placed in industry that in many cases there is some justification for this viewpoint. But nevertheless they are performing a valuable function which should be patent to them.

The Foreman as a Manager. Perhaps the simplest way in which the large concern can increase the effectiveness of its organization is by setting up each foreman in business for himself, and thereby duplicating within the large organization those conditions which have proven to be stimulating and energizing in small concerns.

In order to set a foreman up in business for himself and to make him a real manager he must be given certain definite pieces of equipment with which to work. The purpose of these tools is to accomplish two results:

1. To have him know the job and know that he knows it.
2. To instill in him creative imagination, i.e., to make him definitely feel the responsibility for developing and improving the operations under his charge.

The equipment with which the foreman must be supplied before he can start out as manager of his own business is as follows:

1. Daily records of the efficiency with which he uses labor and material.
2. Standardized operations and equipment, developed by the aid of technical assistance when necessary.
3. Financial and verbal recognition of his efforts and accomplishments.
4. Information as to cost of both labor and material, in order that he may judge as to the comparative importance of each.

Records. The foreman's records need not be very elaborate, but they must comply with certain simple requirements. If they are to be of any direct value to the foreman in telling him just what is going on in his department they must cover a short period of time, preferably a day, because in the very nature of the foreman's work, he is continually dealing with a vast multitude of small questions in quick succession. He usually is thinking,

therefore, in short-range terms, and it is almost inevitable that the problems of one day will crowd out of his mind the questions of the preceding day. Not only must his record cover a short period, but it must be prepared and placed at the foreman's disposal promptly. For records to be effective the foreman should receive them every morning, by nine or ten o'clock, covering the activities of the preceding day. To show the foreman a report of his work in the afternoon of the succeeding day will annoy him, and while he may not say so he will wonder why you talk about yesterday when he has so many important problems which are fresh in his mind today.

Just what the foreman's records should contain varies according to the nature of the work he performs, but in essence they should show what the foreman expended in labor and material (if material is under his control), and with what efficiency labor and material were utilized.

Requiring the foreman or his clerk to make out this record means that the speed with which the information is collected is entirely within the foreman's control, and it gives him an opportunity to review each day's record before anyone else sees it. Delays which may have occurred or failures to meet standard of performance come to his attention, giving him an opportunity to think over the reasons for the occurrence, and possible ways to avoid such difficulty in the future. When he submits the report to his superiors he probably does it with comments, calling attention to the deficiencies and offering recommendations as to what action should be taken in order to prevent such delays or difficulties in the future. This has the advantage of putting the foreman on the offensive with his superiors rather than on the defensive.

Performance Standards, Standard Operations, and Technical Assistance. Naturally the setting-up of the foreman in business involves a certain expense on the part of the company, and while there are direct benefits which accrue from it, the greatest improvement from a financial point of view can be made, usually, by standardizing the operations and supplying adequate technical assistance in equipping the foreman's business with the most improved devices, instructing the foreman in their practical use, and also training the workers in the best operating methods which can be determined, either by current practice in other shops, or through time and motion study.

There is one point in connection with the standardization of operations which is always important. Frequently there arise two ways of performing a given piece of work, one suggested by the foreman and one by the staff men. Whenever the merit of the two methods is reasonably well balanced, it is advisable to adopt the foreman's idea, not only because he will be more interested after the installation work is completed, but it will also encourage him to bring out other ideas in the future.

Profits and Praise. Certainly the most important single element, and that element which injects the real life blood into any going concern is the profits. Therefore, in setting a foreman up in business it is essential that some good incentive plan be devised in order to permit the foreman to participate directly in the profits which accrue from his management of the business. The financial appeal is a very strong one, and when it is made to the foreman of a group it frequently has very astounding results. We have had the

experience of installing a group bonus plan in which the foreman participates in a department in which we felt we had cut the cost to a minimum, and were securing the maximum production by means of piece rates and premium rates. We were indeed surprised to find that the putting of the foreman on an economy-sharing basis reduced the overhead of the department, increased the production per man hour, increased the earnings of the direct labor, and made a much smoother running and more satisfactory department as a whole. However, I do not feel that by giving the foreman a wage incentive the company discharges its full responsibility. One of the gravest errors which many companies make is to say little or nothing to the foremen except when something goes wrong. I believe that it is just as important to distribute praise as it is to distribute blame, and I do not believe that it is sufficient to simply set up a foreman in business, offer him a share in the profits of that business, and not notice its accomplishments or commend the foreman. Oftentimes a little praise is far more appreciated by a member of the rank and file than a considerable sum of money.

Cost of Materials and Labor Used. Management is rapidly coming around to the point of view that cost data should be permitted to filter down through the organization. The foreman who is in business for himself should be furnished with accurate cost data with regard to the material which he uses. He needs this first of all to eliminate waste, and to utilize scrap as far as possible. On the other hand, simply urging the reduction of waste oftentimes leads to expending inordinate amounts of labor in salvaging scrap, unless the relative value of material and labor be always at the foreman's command, so that he may know to what extent expenditure of labor is justified in order to reduce wastage of material.

Results. Having equipped the foreman with the essentials which will make him the manager of a business of his own, there remains one very important factor, and that is to set up some record which will show not only to the foreman himself, but to the management of the company, whether his administration of his duties has been progressive or retrogressive.

In conjunction with establishing the foreman in his own business very strenuous efforts should be made to impress upon him the importance of progressive standards. He should be made to feel that what is good enough for this year will not be good enough for next year and that as a result of each year of his interest and enterprise new developments and improvements should be brought out by himself or his subordinates, and that no matter to what degree of perfection he has raised his operation, there is always room for further improvement.

The setting-up of the foreman in his own business should have certain very definite results.

1. It should make for a more responsive organization. The whole effort has been designed to make the foreman know his job better, to make him in every sense of the word a complete master of all the operating details of his department. This presupposes increased self-respect on the part of the foreman, increased interest and attention, and greater enthusiasm, all of which contribute to making the organization more effective, more quickly responsive to the demands of the business.

2. Definite economies should be effected. The work of setting the performance standards and standardizing operation should pay a very handsome return for all the time and effort expended in installation work. The energy and interest on the part of the workers and foreman which are tapped by the wage incentive will produce economies.

3. In addition to the economy and effectiveness of making a foreman manager of his own enterprise is the good will that is created. This good will is by no means limited to a feeling of good will towards the company in the foreman himself, but it extends through his influence among his subordinates and his circle of acquaintances indirectly through the community as a whole, and while good will in the community in which a plant is located does not necessarily mean increased sales, it is nevertheless a definite advantage which should not be overlooked.

4. The last result is the benefit done to the foreman himself—the character-building effect of his better understanding of his job and himself. There can be no doubt but that the foreman who is thoroughly wide-awake and fulfills all of his responsibilities as a manager is actually a better citizen and that society benefits from the upbuilding of the man.

RATING SUPERVISORS

By HARVEY G. ELLERD, *Personnel Department, Armour and Company*

Ratings are and always have been an integral part of organization work and we cannot escape them in some form or other. The defect in the old system of judging abilities and qualifications of supervisors was that consideration was not given to all the qualities and too often judgments were formed on one or two conspicuous abilities or characteristics and the others were not weighed. Very often the person doing the judging attached exaggerated importance to certain qualities and entirely disregarded others. Offhand opinions and personal prejudices played entirely too important a part. Because of these defects, it became apparent that an organized, systematic attempt to value all qualifications, experience and performance was bound to produce better results. It is on the methods and systems that there seems to be such a diversity of experience and opinion.

Armour and Company's first experience in rating supervisors by a definite, systematic method dates back to 1919. At that time, a consultant was called in, and after a lengthy study of our situation, an adaptation of the army rating system was installed. This system, however, did not prove satisfactory and was discontinued after two ratings had been made. No further attempt along this line was made until early in 1925. The subject was then reopened and after a rather lengthy study of the various plans and methods then in use by other companies, a very simple form was adopted.

The accompanying form calls for the employee's name and position, his age and years with the company, then his grading as to five general characteristics.

1. Personal qualities.
2. Intelligence.
3. Physical qualities.
4. Leadership.
5. Trade knowledge.

The person rating the supervisor is asked to indicate his opinion as to what extent he possesses these various qualifications. A check mark is placed

ARMOUR & COMPANY

PERSONNEL DEPARTMENT

LOCATION _____

EMPLOYEES' GRADING REPORT

192

REPORT ON _____

GRADING ON GENERAL CHARACTERISTICS

INDICATE GRADING WITH CHECK(✓)

CHARACTERISTICS					
	1	2	3	4	5
	EXCEPTIONAL	ABOVE AVERAGE	AVERAGE	BELOW AVERAGE	POOR
1 PERSONAL QUALITIES					
DEPENDABLE _____ TACTFUL _____					
INDUSTRIOUS _____ CO-OPERATIVE _____					
OPEN-MINDED _____ SELF-CONTROL _____					
LOYAL _____					
2 INTELLIGENCE					
JUDGMENT _____ CLEAR _____					
PERCEPTION _____ RESPONSIVE _____					
LOGICAL _____					
3 PHYSICAL QUALITIES					
HEALTH _____ SIZE _____					
ENDURANCE _____ VOICE _____					
APPEARANCE _____ SIGHT _____					
HEARING _____					
4 LEADERSHIP					
INSPIRING _____ RESOURCEFUL _____					
CONVINCING _____ ABLE _____					
PERSONALITY _____ RESPONSIBILITY _____					
5 TRADE KNOWLEDGE					
INFORMATION _____ EXPERIENCE _____					
EDUCATION _____					

GRADING ON PERFORMANCE

READ ALL THREE PARAGRAPHS (6, 7 AND 8 BELOW) CAREFULLY BEFORE CHECKING THE ONE WHICH DESCRIBES HIM IN HIS PRESENT WORK.

(CHECK (✓) AND FILL OUT ONLY ONE OF THESE.)

6 ☐ **UNSATISFACTORY IN PRESENT WORK**
 OTHER WORK DO YOU HONESTLY FEEL HE COULD DO BETTER
 WHAT ACTION IS PLANNED? _____
 "SICKLE," WILL GIVE FURTHER TRIAL," WILL REASSURE FOR OTHER WORK," WILL LET GO AS SOON AS POSSIBLE," ETC.
 WHAT IS HIS CHIEF DEFECT? _____
 CAN IT BE REMEDIATED? _____ HOW? _____

7 ☐ **SATISFACTORY IN PRESENT WORK (RENDERING FULL SERVICE, BUT NOT QUALIFYING FOR LARGER RESPONSIBILITIES)**
 WHAT IS HIS CHIEF LIMITATION? _____
 WOULD SPECIAL TRAINING HELP HIM? _____
 WHAT? _____

8 ☐ **EXCEPTIONAL (WILL DEVELOP FOR GREATER RESPONSIBILITIES)**
 IF SO, ALONG WHAT LINE? _____
 WHERE? (YOUR DEPT., OR SOME OTHER) _____
 WHEN WILL HE BE READY FOR ADVANCED DUTIES? _____
 WHAT ARE YOU PLANNING AS THE NEXT STEP IN HIS DEVELOPMENT? _____

9 REMARKS, INCLUDING ANY PRESENT EFFORTS AT SELF-EDUCATION AND ANY SPECIAL AMBITION:

GRADED BY _____
 APPROVED BY _____ NAME _____ POSITION _____
 _____ POSITION _____

FIG. 1.

in one of the five squares indicating the degree: exceptional, above average, average, below average or poor. To assist the rater in forming his judgment,

the various factors which in our opinion go to make up and define the characteristics, are shown under each characteristic, and in considering the general characteristic the rater must first consider to what extent the one being rated possesses each of these factors. He then averages all of these, and by average we do not mean arithmetical average, but simply a mental weighing of the various factors to determine the total value on the general characteristic.

For instance, let us take the first item: personal qualities. Properly to judge these analysis must be made on the extent to which the employee is dependable, industrious, open-minded, loyal, tactful, cooperative, and possesses self-control. The average of these estimates will be the weight of his personal qualities. There may be quite a difference of opinion as to whether or not the various descriptive words are directly apropos of the characteristic.

However, they best serve our purpose in their present form, and by having them clearly stated all our ratings are on exactly the same basis. We expect that as time passes improvements will be suggested that will further aid the purpose we have in mind. There is no finality about our present method, but we have found it to be better than our first method.

The next consideration is to grade the employee on his performance; that is on the job he is now on. All men naturally fall into one of three groups.

1. Unsatisfactory.
2. Satisfactory or average.
3. Exceptional.

If an employee is graded as unsatisfactory in his present work then we want to know what other work the rater felt he could do well, what action is planned such as giving another trial, letting him go, or some other suitable action. We also ask what his chief defect is and whether it can be remedied.

If an employee is rated as satisfactory on his present job but not qualifying for larger responsibilities, we then ask what his chief limitation is and whether special training would help him, if so what? Many employees are in this class. They are the pillars that support the organization. No business could operate without a large percentage of such people. On the other hand, of course, they are not promotional possibilities. We have found in a number of cases that a change in the line of work or some special training or experience may help to qualify some of the members of this group of employees for better jobs.

The exceptional type of employee is the promotional possibility who will develop for greater responsibilities. When we find a man of this type we want to know along what line his advancement should be and where, also when he will be ready for advanced duties and what next step is planned in his development.

Procedure in Applying the Rating to Our Supervisory Force. This new rating form was applied first to the supervisory organization of our operating and manufacturing division. The results were so satisfactory that the following year this same rating form was extended to our branch house sales division.

The writer went personally to each plant. Later a member of the personnel department visited the headquarters of each of our branch house sales dis-

tricts. The method of presenting this new rating or grading plan to the operating and sales divisions was practically the same.

The general manager of the plant and the representative of the personnel department rated the various plant sales department heads and assistants. These are the men that the general manager at each plant supervises directly. They also are directed by general sales department heads at the Chicago home office. The ratings on local plant sales departments were checked by the Chicago department head later. The office manager then rated the office force, which ratings were later checked by the general office manager in Chicago.

Consideration of Tendencies of the Raters. Then the plant superintendent at the local plant rated all his department superintendents, foremen, assistants, and such other men in the ranks whom he considered promotional possibilities. I sat in on these ratings, making suggestions, asking questions and watching the tendencies of the man making the rating. Some of these men are enthusiastic and impetuous and in their opinions, their men are apt to be all unusually good men. Other men, more conservative by nature, are apt to rate their men lower. However, it only takes a very brief experience with these men to know their tendencies, and in considering the ratings on their men to know whether they are rated high or conservatively. In this way we know that a man rated as average by one superintendent compares favorably with a man rated as above average by another superintendent.

To check further the opinions of the superintendents as to the plant supervisory force, the general superintendents' organization in Chicago was asked to review these ratings and make any comments upon them that they felt were necessary.

It has so happened for a good many years my own personal experience has kept me in rather intimate contact with the supervisory force of the various plants and as the ratings were being made, I was in position by reason of this knowledge, to make suggestions and to ask leading questions that I felt should be given consideration in the individual ratings. Where I had a difference of opinion based upon contact or experience with an individual, I made special note of that on the rating form. This may have helped to remove possibilities of prejudice, and at any rate, it insured a very careful consideration of each qualification of each man.

At the present time we have made four yearly ratings on practically all of our plants and branch houses. At first it was our feeling that we would make these ratings twice a year. Since we have extended the rating system to our entire personnel and as it takes a considerable length of time to cover the entire organization, we found this to be impractical. Now we have ratings made once a year and find them to be just as valuable and as effective as when they were made more often.

The results from this organized method of judging the supervisory force have been well worth the cost and the effort expended, and I can say confidently that this method of rating is a fixture as a part of our personnel work. I have no doubt that improvement will be made from time to time but, in the main, we find the present method giving us the knowledge of our organization and the control of our personnel that is so very necessary.

Our first rating indicated many weak spots in the organization, and steps were taken immediately to correct these weaknesses. In some instances they had existed for a long time, but the correction of them had been put off. The rating indicated it so vividly that the step was taken immediately. It indicated also the individual weaknesses or deficiencies in certain of our men, and it challenged our thinking to work out methods to correct these deficiencies.

Correcting Elements Lacking in Men. We, of course, realize that there is no possibility of securing men with 100 per cent qualifications, and if we can correct some of the elements that are lacking in the men we have, we are away ahead. Very definite steps have been taken to do this in several instances. As an example of one of these instances: We have a man as a division superintendent in one of our plants who lacks the aggressiveness and punch that he ought to have to become a real leader, and we have felt that he could acquire a good bit of this by contact with other people. We have arranged to put him in a position where he travels to all of our plants on a standardization problem, and we feel that this contact with a larger number of people, many of whom are in positions superior to his, will be helpful in overcoming this deficiency.

Our ratings also indicated clearly the employees who are the stand-bys in the organization. That great army of men and women without whom we could not function, and yet, who by reason of various limitations, are not in line for greater responsibilities. They carry the load of their own work with exceptional ability, and when necessity arises to replace them there is usually considerable difficulty about it.

These facts awakened in the minds of our officials an appreciation of this group that never had been indicated before. We have to have privates in industry just as we do in the army, and we cannot have people all of whom are qualified for positions of greater responsibilities.

It indicated to us, too, those persons who are promotional possibilities and just what was necessary to develop them for bigger jobs. A number of men, upon the making of this analysis, were found to be ready and fully equipped for better positions, and wherever possible advancements were made almost immediately.

There are others who may require additional experience on their present jobs, or they may require specialized experience, and the picture presented by their rating was so vivid that wherever possible steps have been taken to supply that experience that may be lacking.

About the time that we completed our first rating it became necessary to man two new plants which had recently been purchased by the company, and in doing this the ratings were used to very good advantage, and they enabled us to make selections that we otherwise would have made by relying upon memory or general impression. It is strange what insignificant things form favorable or unfavorable impressions of men, and it is our hope that, with the use of a method of this sort, the thoughtful consideration given to all qualifications and characteristics, will overcome hasty impressions which so frequently are incorrect.

One does not want to give the idea that there are no weaknesses in our method; on the contrary there are many of them. The fact that so many of

these characteristics are not subject to objective measurement is a matter of concern. If we had some measuring stick that we could definitely apply to men as regards abstract qualifications, it would be a happy situation indeed, but items such as judgment or dependability or cooperativeness or self-control, are not things that can be measured, and we simply have to accept an expression of opinion upon them from the person who is in close and intimate contact with the man being rated. The fact, too, that we supervise these ratings so closely assures us of getting a similarity of definition. We are certain that all of our people are defining these qualities in the same way, and by doing that their opinions are based upon the same factors. They are of course only opinions, but when expressed in a definite way along a prescribed line, they become valuable, and especially so when they are carefully supervised by a single individual. They are far more reliable than if we relied upon each individual rater to make his rating without such supervision.

Measuring a Man's Ability. As to performance we can have a definite measure of man's ability. We know from his production costs, quality of his product, and the stability of his organization whether or not he is coming through, and we have a measure that we can apply on them. As far as the intangibles are concerned, we have to accept them as being matters of opinion.

In several instances men have been recommended for salary increases or for promotion, whose ratings did not indicate that they are deserving or are the right type. In some of these cases when we have called this to the attention of the person making the recommendation, we have encountered stubborn objection and the statement that the rating is wrong. However, it has only taken one or two instances to indicate that the rating must be accurate or difficulty is going to be encountered in putting through recommendations that are inconsistent with it.

In one specific case a plant superintendent definitely rated one of his foremen as having ability to become a division superintendent. At the time the rating was made I questioned it very carefully because I knew the man well and did not feel that he possessed the necessary qualifications. It so happened that a little later there was a vacancy at this plant and this superintendent recommended another one of his foremen to become a division superintendent. When we asked him why he did not take the man that he had rated the highest, his answer was that he had changed his opinion of him, but a careful analysis of the situation led us to believe that he had rated the man highly in order to get him out of his plant, and that when the opportunity was presented where he might have promoted him, he would not do it under any circumstances.

Cases of this sort are isolated instances, and there may be such a temptation on one or two occasions, but it will not happen frequently.

We also encountered one or two instances where high ratings were given to men evidently for political reasons. These men in some cases, were relatives of officials at other places, or were reputed to be protégés of certain officers. This weakness will always be displayed, and in considering the ratings as we are using them, we have to make allowance for it.

The attitude of mind with which this present rating plan was received by our old timers is of interest. We have been in business now over sixty years, and we have a lot of hard-boiled supervisors that have come up through the ranks. They are not easily sold on any new fangled ideas. We anticipated that there would be a good bit of joking and possibly some objection to it just as we encountered in our first rating scheme, but we were agreeably surprised. It was received seriously, and was apparently established in the minds of most of these men as being a very necessary adjunct to our business. One old-timer said to me, "It's about time we had something of this sort. Now we are going to be judged for what we know and not for whom we know."

Desire for Better Valuating Methods. Of one thing we are definitely convinced, some method of valuing supervisors is essential, and the more simple that method can be made the more effective it will be. In any improvements on our present method we shall lean over toward the side of simplicity.

This conclusion was brought home to us because of the sincere conviction that ratings must, to a large extent, be gaged upon the capacity of the persons who are to do the rating, and they must be expressed in the terms and language which are commonly used by these people. They must not be burdensome, lengthy or involved, or there will immediately be a lack of interest if not a definite resistance.

If we received no other return from our rating method than the fact that the heads of the various divisions of our business made a careful analysis, inventory and valuation of their organizations, it justifies itself in every way.

We know, of course, that this is only one of its valuable features. The inspirational effect upon the organization and the hopefulness that they will be given their opportunity to break through is another value that is immeasurable, but it is there to a wonderful extent.

In the past we had felt rather complacent in the thought that we had means of keeping good people before us and not permitting them to be buried, but our ratings indicated clearly how weak we were in this respect and how necessary a frequent inventory of our manpower was if we were to keep before us constantly the people with promotional possibilities. I can say without hesitation, that with us ratings of our supervisory force are no longer an experiment. They are a fixed and definite part of our personnel policy.

WOMEN IN SUPERVISORY POSITIONS

By **E. H. LITTLE**, *Assistant Supervisor, Industrial Relations, United States Rubber Company*

Before entering upon any discussion of the subject of women in factory operating positions—their selection and training, their handicaps and contributions—one reservation must be made. Discussing the subject at all violates a principle laid down for myself and runs counter to advice given others on more than one occasion, namely: Ignore the fact that you are a

woman. Assume that if you have anything to offer it will be accepted on the basis of you as an individual; neither that it will be refused because you are *not* a man, nor that it will be received because you *are* a woman. This is women's sound and logical approach to their problems in industrial and business life. I should like to leave it at that, but so recently have I heard a man register his objection to the masculine woman that I hasten to forestall any possible interpretation of the above to mean that I am advocating woman's attempting to copy man's habits or mannerisms. That is suicidal—principally because it is a *copy*. True sincerity and freedom from affectation of any kind are first requisites for a woman's progress in the industrial field.

Scientific studies have repeatedly shown that individual differences between men, and individual differences between women are so much greater than general differences between men and women that we must conclude that these general differences are themselves in greater measure a result of training and environment than of inherent differences between the sexes. If this is admitted the subject really resolves itself into: What is the difference in the education, training and experience of women holding positions of forewomen or assistant forewomen in factory work, and men holding similar positions?

Industry is not a new field for women of the type we find in factory supervisory jobs. Domestic service and factory work have been open to women longer than any other lines of work. In the days when these two fields offered women their only opportunities of earning a livelihood outside their own homes, the question of unfavorable comparison of forewoman with foreman was far less frequent than today. I say this on the basis of my observation of the type of our older women supervisors that are passing on to our pension rolls, and also from talks with older superintendents. From them I hear stories of the old contract system in industry; that women, as well as men took out those contracts; and that they held positions that are now held by men. What is the difference? The answer lies in the new and better openings for women. With the change of public opinion toward education for women, factory work, because it did not require an education, took unto itself a stigma little better than domestic service. The fact that supervisory positions in factory work call for patience, persistence, resourcefulness, and leadership, plus skill, in short for character, which will always be an attribute higher than education, was not sufficient to offset public opinion's deprecatory attitude toward the factory girl. And the inevitable result is to lower the calibre of the group from which we must select our forewomen and assistants.

Four Classes of Women Workers. It has been the practice, even more generally with women than with men, to promote from the ranks. The rank and file then as the source from which we draw our supply of women supervisors cannot be passed over in our attempt to analyze the forewomen of today, or of tomorrow. Whom, then, do we find in the rank and file? They may roughly be grouped into four classes: the young girls, the unmarried older women, the married women, and the widows.

In the first class are the young girls who have gone into industry direct from grammar school, or as soon as they can get working certificates. Factory

work is their temporary avocation preceding their vocation of matrimony. In time they may have to return after an unsuccessful venture in the latter field—but who of us anticipates lack of success—at least when we are under twenty. Such a characterization of this particular class intentionally suggests the impermanence and lack of stability of the young factory worker when viewed in the light of a possible supervisor. Even as I write this, I am reminded of some striking exceptions. In justice to these, I must make the point that young men of the same age, satisfactorily holding down supervisory positions, by comparison, are quite conspicuous by their absence. This difference is doubtless due to the fact that boys mature more slowly than girls, who, having already assumed home responsibilities, respond better to those placed upon them by industry.

In the second class we find those of this first group, who, as the years pass, find the possibilities of their prospective vocation of matrimony fading away, and its place being taken by their avocation. Very frequently the reasons back of this change of point of view are dependents in the home circle, a widowed mother or an invalid father. For any one of a number of reasons, she *must* continue to bring home her weekly pay envelope, and so she settles down to life as a factory worker.

In the third class is another group, part of whom belonged originally to the first class—that is, the married factory workers. There are those who have found matrimony an unsuccessful venture; the husband through sickness, accident, or general incompetence cannot support the family, and the wife must contribute her share. Added to the disappointment of realizing what life holds out for her are home duties and responsibilities. Even if the factory makes the mistake of selecting such a worker for promotion, she usually may be counted upon to refuse this further responsibility.

Another group of this class is the girl who voluntarily keeps on working after her marriage. She does it for one of two reasons. Either she does not know what else to do with her time, or else she and her husband are working for some particular objective—an automobile or a home. Whatever the reason, her continuity of service cannot be depended upon. Finally in this class we find the married, and frequently un-Americanized foreigner. Regardless of husband's income, and children needing her attention, she yet expects and is expected to contribute her weekly wage. For obvious reasons she is poor supervisory force material.

In the fourth class are the widows. They have two probable drawbacks when considered as possible supervisors. In addition to the fact that they are likely to be struggling with the very insistent home demands of growing children, their tendency is to look upon their own lives as past and finished. They, therefore, lack the "pep" and initiative that make for leadership.

Source of Successful Supervisors. We return then to the second class as the source from which we shall find that most of our successful women supervisors and forewomen have come. These are the unmarried women who have stayed on in industry. If one may generalize, we may sum up their qualifications somewhat briefly in this way. Having entered industry direct from grade school, they are lacking in general education. Having had long experience in the industry, they are skillful workers. Having worked

for years in the same place, they are narrow in experience. They have been promoted on the ground of their high quality workmanship, good attitude and all-round superiority to their fellow workers. In native ability, then, they are above the average, but lacking opportunities either of education or breadth of experience, they are handicapped when they come to assume the wider responsibilities of directing the work of others, and of developing the qualities of leadership. Here then is the background, education, training, and experience of the average factory forewoman. If, by analyzing this education, training and experience into their probable results, we can find the reasons back of the unfavorable comparison of women with men in factory operating positions, this analysis should suggest the paths which lead to the solutions of the problem.

The Forewoman's Handicaps. First, *lack of education and experience.* Right here, I put myself in the position of any one of upwards of a hundred women supervisors with whose problems I am intimately acquainted, and I try to think out what would be my obstacles to proper functioning as a member of the management, and I believe that my lack of education and experience, which in itself would limit my possibilities for promotion, whether I were a man or a woman, would also be back of many of the criticisms of me as a supervisor. It would be back of the charge that the forewoman does not get the management's point of view, and does not understand the cost phases and business principles of factory operation. It would account for lack of self-confidence; a hesitancy to accept responsibility, and to make decisions; and the failure to criticize and make constructive suggestions for the betterment of the department. The narrowness of experience would, in itself, be reason enough for certain lacks of mechanical knowledge, of resourcefulness, and of failure to see things in their proper proportions with a consequent overemphasis of details and "little things." All these charges I have heard brought against women unqualified—not against women who have been limited by conditions over which they had no control.

Second, *lack of incentive because of lack of promotion possibilities*—even for the exceptional forewoman. How many rungs are there in the factory girl's promotion ladder? Worker, inspector, forewoman—what then? How many have taken the next step up? To tell a forewoman that if she does a good job she may be promoted, somewhat closely resembles telling the small boy that if he gets his lessons he may some day be President of the United States. When the factory worker has become a forewoman she has arrived, and there is nothing ahead. Let any one of us take that fact and think it out to its logical conclusions. Can we not see in it reasons back of some other objections to women as factory supervisors? When incentive is gone, the hard things in the day's work become harder because they are not only today's work, but tomorrow's and next year's, and the temptation to duck them comes just that much stronger. "Women don't like to do unpleasant things." Is it surprising? When a man does an unpleasant thing well, in the back of his mind lurks the possibility of the reward of promotion. There may be more unpleasant things to be done on the next job, but they won't be the *same* ones, with the *same* people. Then, we hear that the woman is more emotional; she gets upset. Why not? What does she lose by so doing or gain by

refraining from her tears? At this point I want to ask another question. If we wish to deny, to woman, woman's privilege of tears, do we, at the same time, extend to her man's privilege of "cussing" or do we expect her to be wholly superior to men in this respect and require no form of emotional outlet?

With the lack of promotion possibilities for women, we see a vicious circle operating to her disadvantage. Because management has ruled out the possibility of her promotion above the position of forewoman, her job is too good to waste on a woman. One of the arguments for putting men on jobs supervising women workers is that these jobs are good training places for those higher up, therefore they should be filled by young men being trained for future executive positions.

Third, *for the same job a woman, regardless of how well she fills it, receives less remuneration than a man.* It would hardly be surprising if this fact did not reflect itself in her attitude toward her work. Woman has a strong sense of service, but even as she serves she says to herself, "Now don't be a fool, you won't be paid for that extra effort," so instead of incentive for exercising initiative and assuming responsibility, comes the deterrent of unequal pay for equal work. To a group of factory clerks was put the question: "Would you like the job of section foreman in this factory?" Their answer was, "If there is a chance to make the money that goes with the job, we're willing to work for it."

Fourth, *a woman has more definite home duties than a man even though she may be the breadwinner for the family.* It is the rare exception where the woman supervisor or forewoman does not have to meet comparatively heavy demands in her home, as well as at the factory. This, of course, is a condition over which the factory has no control. Frequently it does account not only for her lack of initiative—too often that is going into the solution of home problems—but also for the fact that the long factory hours present a physical drain greater than she can handle. Facts and statistics prove that here, women in general suffer a real handicap as compared to men; but in addition to this general health handicap the forewoman who has remained in industry as a means of meeting those home responsibilities frequently has two distinct jobs: the factory job and the home job. This unquestionably affects her efficiency as a member of management.

Qualifications for Promotion. These are the handicaps of people with home responsibilities, who tackle a supervisory position, lacking education and variety of experience, and for whom little incentive is provided. They would be the handicaps of a man similarly situated. It is these handicaps which do account in large measure for the arguments brought up against placing women in such positions. I am more than ever convinced of this when I review the conspicuous success achieved by some of the forewomen of my experience. One is a college graduate, another whom I think of is a graduate of high school and a third lacking formal education has its equivalents in family background and standards of attainment. With these particular women, as with others I could mention, there is an assurance and confidence in their handling of workers that bespeaks a job well done. They execute that job with a "finish," that in my experience could characterize only one foreman supervis-

ing a group of women factory workers. In other words the problem resolves itself into finding in our rank and file the woman with the proper qualifications for promotion. Discuss the question with an open-minded foreman or superintendent, and his insistence on the "right type" will again bring home to us that it is a question of individual differences rather than general differences between men and women. So our problem of women in the supervisory force has reduced itself to the problem first of recruiting, then of selecting and finally of training. In those three words—recruiting, selecting, and training—I realize, to use a classic expression, "I've said a mouthful." In fact I am afraid thus far I have painted a rather discouraging picture. With that in mind I shall devote the next section of this paper to comparing the assets and liabilities of men and women supervising departments in which female labor is employed for the purpose of determining whether the benefits to be gained will warrant the effort entailed in recruiting the right kind of women supervisors.

While there are still factories employing large numbers of women workers who do not consider it practical to promote women to responsible supervisory positions, there are many others with whom this has always been a policy and they believe that this policy nets them results which can be achieved in no other way. What then is the contribution they expect from these women which they would not get from men in similar positions?

A Woman's Assets and Liabilities. A woman's greatest contribution lies along the lines of her personnel relations with her subordinates. She understands them better than does the man. In fact, I am inclined to believe that the average man prides himself on his inability to understand women. It is just that lack of understanding which will fail to unearth many of the causes of friction which prevent a smooth running of departmental machinery. Unhappy love affairs, problems of domestic relations, sickness in the family resulting in sleepless nights can all affect production. Cases of this sort as well as problems of personal hygiene are more readily discovered and better handled by a woman than by a man. A woman can give her workers a personal interest and encouragement which may in itself increase earnings and decrease costs. Usually having been promoted from the work itself she has a better understanding of the details of production problems than would a foreman. She knows what may reasonably be expected in the way of workmanship and production. When she is a good supervisor less is "put over" on her. With her, tears are no weapon. Finally, she can present to the management the women workers' point of view. She becomes the "friend at court," and her existence is even more important than the concrete things she brings to the management's attention. In these days of a more adequate evaluation of the importance of human relations the opportunity to cash in on a contribution such as I have outlined here should not be underestimated and cannot be overlooked.

These are her assets in dealing with women. May she not also have some advantages in her dealings with men? Judging by my own experience she has. With regard to her superiors, when she deals with the better type of foreman and factory executive she receives a courtesy and a generosity which manifests itself in an attitude of helpfulness and cooperation and which fre-

quently gives her a head start. The less advantage she takes of this conventional deference of man for woman the more it will be granted her. With the occasional man whom she finds among her subordinates she frequently has less difficulty with regard to discipline than would a man. The difference in sex supplies just that barrier which simplifies the job of supervising another person. Certainly it has been our experience that when due to changes of production it has been advisable to use temporarily some of our women supervisors with male workers they exacted and obtained higher standards of performance than the usual man supervisor.

The forewoman has some handicaps in her dealings both with men and with women. This must be recognized. First, in her contacts with women. The handicap that I most regret to admit, is the attitude of other women. Women have taken their place in affairs outside the home for too short a time to have developed the class consciousness and class loyalty which make for recognition of leadership by one of themselves. Moreover they lack the boyhood training of gang membership and hero worship which teaches both leading and following. Hence entirely too frequently do we hear a woman say "I don't want to work for a woman." This will be corrected only as women supervisors demonstrate that they are the kind of persons for whom people like to work, and that is women's problem and more than ever the challenge of those of us on whom industry and business have placed the greater responsibilities, and one which quite frankly I, personally, accept very seriously. We ask the help of men in just one respect: Please don't capitalize that remark when you hear it, but instead won't you analyze the objection down to the particular quality of the woman supervisor to which the woman employee is objecting, and see if it is a fault for which men may be wholly exonerated. In other words is it really characteristic of women, or rather characteristic of a poor supervisor. And don't be misled by vocabulary. I have frequently wondered just what was the essential difference between jealousy among women and rivalry and competitive spirit among men except the difference in the connotation of the terms. Certainly the products of the two emotions are strikingly similar.

The Problem of the New Forewoman. At this point it may be well to point out that one of the reasons back of the popular assumption that women object to a woman supervisor is that a new forewoman has a more difficult problem to face than a new foreman, both supervising female employees. The woman invariably will have been promoted from the particular group she is asked to supervise. In the first place, some of them remember when she was a learner, they all probably can think of some mistakes she has made. In the second place, to be a good supervisor, and to avoid the accusation of favoritism and partiality she must establish a difference between herself and her workers; she must have no intimate friends among the group. At the risk of being called "stuck-up" and conceited, she must change her relationship to her former coworkers from being one of them, to being one over them. For the man, the difference in sex provides the barrier which automatically eliminates 50 per cent of the new supervisor's obstacles. This then is a problem of careful training and wise encouragement, both of which can better be given to a woman by a woman than by a man.

So much for women's handicaps in dealing with women. What problems do men present to her? Probably because she seldom has to deal with men in any number among her subordinates, they in my experience present small difficulty—not so her superiors. Here her greatest handicap lies not in their reluctance to accept her as an individual, but rather in their tendency to treat her on the basis of her being a woman. As such, "she is a peculiar animal, unaccountable, she doesn't reason and can't understand, therefore why explain? Better save your breath!" So with few explanations, she is given instructions instead of policies. Then when changed conditions have invalidated the instructions, she is blamed for lack of results and the whole situation is dismissed with the all-inclusive explanation "just like a woman."

Woman does not have an easy course to steer to win the confidence and respect which will gain for her a man-to-man treatment. With wisdom and foresight she must avoid on the one hand the Scylla of being an "easy mark" who will give way under opposition; and on the other the Charybdis of being a "crab" and a "crank" whom the foreman fears will "get started." If I could endow her with a magic gift to aid her with her problems it would be a good stiff backbone well coated with a sense of humor. I would give that backbone such a thick coating of sense of humor, that the other fellow would not know that the backbone was there until he woke up the next day to find she had had her way when he had thought the decision had been his.

A Man's Assets and Liabilities. At the risk of overemphasizing the problems of the woman supervisor in a factory I have tried to deal faithfully with all those objections which at various times I have heard brought up to her discredit and disadvantage. Now the time has come to consider the foreman in his relations to his women workers. I have already admitted that convention and precedent give him an advantage, particularly in the class from which factory workers are drawn. Here man is much more dominant than in the group where the girls as well as the boys of the family take for granted the opportunity or privilege of a college education. This conventional difference is, I believe, the basis of the foreman's advantage, and he himself will admit he has handicaps. He knows that the undesirable factory girl will, and any of them can, take an advantage of him that would not be attempted with a good forewoman. He cannot try to discover the real truth back of many a situation. Moreover before tears he is helpless, and tears are not always what they seem. As a means to some ends desirable to the factory girl they are more effective tools than the equipment with which the management provides her. We hear much of the value of personal interest shown in one's workers and yet every good foreman knows that he cannot show his interest except at personal risk to himself, and the younger he is the greater the risk. These handicaps he will readily admit. In addition, he cannot know his workers well enough to deal with them as individuals. I am quite sure that this lack of understanding is a real obstacle when he comes to select a supervisor. He knows his workers for their machine-like qualities, for their ability with the materials in his department. He must choose his supervisor for her human qualities, for her ability with the workers in the department. It is a trite remark to say that a good workman is by no means necessarily a good supervisor. An assistant forewoman

must be chosen for her ability to win the confidence and support of other women, and this ability is rarely demonstrated by her success in attracting the attention of the foreman, and yet it is upon this basis that the minor woman supervisor is usually selected.

Management's Attitude to the Woman in Supervisory Capacity. This brings us to the point of management's attitude to women holding supervisory jobs in a factory. It is a very important one. The success or failure of the women depend more upon this factor than upon any other. Foremen reflect their superintendents and works managers. If the company officials assume that women's progress is limited, if they are skeptical, she will be given only half-hearted support and her failure is a foregone conclusion. What progress she makes will be resented both by the men and the other women and the conclusion of the whole matter will be "women don't like to work under her and men won't, and that's all there is to it." This with an air of finality that dismisses the question as a closed proposition.

Even where the higher officials have the right attitude towards women, a difficulty frequently lies with the foreman. In general I would say that the foreman does a better job with his workers than with his assistants and a better job with his men than with his women assistants. He not only fails in the sufficiency of his explanations and in taking too much for granted, but when his assistant forewoman falls below his expectations he blames rather than criticizes her. He assumes she is as she is and cannot be changed. The fault should be laid at his door not hers. Developing his assistants is his job. When he does not do it, the forewoman cheerfully goes along believing she is giving satisfactory performance when she is capable of doing a very much better job. The same foreman who will give to his young assistant an honest appraisal of his successes and failures cannot be counted on to deal with his assistant forewoman in the same straightforward way. This is one of several missing links in the forewoman's training.

The Suggested Solution. Very briefly I should like to suggest the solution of the whole problem—the means to the end of more and better women supervisors in our factories.

I am assuming that we agree that where a factory is employing any considerable proportion of women workers that it is desirable to have forewomen and assistant forewomen of the right type in the supervisory force. Success in obtaining the right type lies along these lines.

First, management must adopt a constructive policy toward the problem. It must make the effort to recruit the kind of worker who will make a good supervisor; it must follow-up the workers closely enough to be able to know and recognize promotion material. Having made the first promotion it must be in a position to give the careful training and coaching that reduces mistakes to a minimum and turns the unavoidable errors into object lessons from which encouragement for future success may be drawn. Management must share with minor as well as major executives its problems and policies. Management must realize that only to the extent that the supervisors, down to the least one, can fairly and adequately represent it to the workers, can management consider itself intelligent. This has been repeated, regarding the foreman, so frequently that I almost hesitate to reiterate it here. But the point

that has not been made equally clear is that this is just as true of the forewoman as the foreman. Therefore my constructive policy is, treat her as you would treat a foreman. The law of supply and demand that has kept down her wages, should not be assumed to apply to her training.

The second is the logical conclusion of the first. If management hopes to realize the best results from its women supervisors, there must be in the management a woman executive to whom the works manager or superintendent can talk as he would to a man. Upon such a woman should be placed the advisory responsibility of developing the women in the supervisory force. Management should look to her to help execute the policy outlined above so far as the women are concerned. To the women she will be an evidence that women's contribution is appreciated and recognized, and that promotion above the rank of forewoman is not beyond the realms of the possible. Such a woman can spur on the other women to motives for success to which only a woman can appeal. To such a woman, the forewomen will not hesitate to tell their problems and to admit their lack of knowledge and misunderstandings. I could illustrate this repeatedly from my own experience. I feel so strongly on this question of the necessity for a woman executive that I would say to any factory manager who is not satisfied with his results from his women supervisors, "If you haven't a woman on your staff who is thoroughly familiar with your policies and who has been given the responsibility and is capable of developing the women in the supervisory force, you do not know what latent power lies hidden in your organization."

CHAPTER VII

TRAINING AND EDUCATION

THE TECHNIQUE OF TRAINING ON THE JOB

BY H. G. KENAGY, *Assistant Manager, Life Insurance Sales Research Bureau*

The investigator who starts out today in search of training methods which can be dignified by the term "technique" is apt to declare, after his first excursion into the field, that he has been looking for something which does not exist. He has asked executives, department heads, field managers, foremen, personnel managers, and educational directors for descriptions of their training methods. They have told him, with variations, that they have training courses, job instruction manuals, even job instructors, but that they have no standard plans for making sure that the instruction is given in the best possible way. In fact, many indicate, though they do not so state, that they do not have training on the job. A few frankly support the policy: Give the beginner a chance to learn and then let him sink or swim; if he has the right stuff in him, he will survive.

Putting the Responsibility on the Learner. At the risk of being considered a captious critic, I shall quote a few descriptions of training methods which came in response to a request for information about methods of teaching on the job. Since I wrote to well-known companies, these examples are taken from the practices of our very best people, so to speak. If they do anything about the technique of training, they did not consider it important enough to mention.

A competent pressman, accustomed to teaching, was assigned a few presses, and young men over twenty-one years of age were selected and given intensive training on the machines, the class of work being such that each one has a chance to learn the operations. Carefully prepared lesson sheets are used by the students and classes are held for special instruction and to discuss any questions that may arise. The plan is proving satisfactory and enables young men, willing to be trained, to learn a high-priced trade in a comparatively short time.

This was one of the best responses. It is good as far as it goes, but it is silent on methods of instruction on the job. And one fears that the silence is due to lack of attention to the fine points of instruction. These are in all probability left entirely to the particular pressman in charge.

New men are usually started on the lowest job in any sequence or group of jobs, and learn their jobs largely by imitation and by word-of-mouth instruction from the other men in the gang or from the foreman.

Then, if the learner, be he a new man or one longer on the job, has ambition and initiative, he is constantly trying out on the job ahead, so that it frequently happens when the next job ahead is open, he is ready to move up to that job . . . Whether the man gets the chance (in the rolling mill) depends on the roller. If he is a real foreman, he gives his men every possible opportunity to learn the job ahead. If he is not this kind, his men are the losers.

Even if all the foremen in this steel mill were 100 per cent anxious to see their men advance, I wonder if that would guarantee that each man would develop the best possible skill in the shortest possible time.

This from an office organization:

Our plan is to place the new employee on a given job under the personal instruction and supervision of an experienced worker on the same job, giving to the experienced worker instruction as to the training to be given. This experienced worker comes directly under the close supervision of the assistant superintendent. It is all hand training, as we have no outlying course . . . We do have a manual of office practices which deals with the technique of their jobs. With this as a text and the experienced employee (most frequently a floorlady or a head correspondent) constantly on hand to supervise and direct, we manage to attain quite a high degree of efficiency.

I do not doubt this last statement. Careful selection and high morale, which I know are present in this organization, will work wonders. I wonder, however, how many new employees are learning inefficient working habits under the tutelage of "experienced" workers who perhaps worked out their own methods by the trial and error system years ago.

From a textile factory comes a description of "our most successful plan of training apprentices":

We give one apprentice to a journeyman. We pay the apprentice, and the journeyman is entitled to all the work that the apprentice does for a period of about three months, in consideration of the time that it takes the journeyman to train the apprentice. If a journeyman is really conscientious in training a boy, this we find is the better plan. Sometimes, however, a journeyman exploits the work that the apprentice can do and will keep him on the task that produces the most for the instructor . . .

As soon as the apprentices are able to go by themselves, they are put on a task basis, but we have men who devote their time to watch the boys so that they do not get into wrong habits of work. The boys may ask these men to assist them whenever they need assistance.

The intimation here is that the chief problem is to find conscientious journeymen. How many school children have had their natural curiosity and desire for knowledge blasted by supposedly trained and thoroughly conscientious teachers?! Besides, the attitude here seems to be wholly passive. Instead of watching the boys to keep them out of bad habits, how much more logical it would seem to teach them good habits from the start.

From a motor company we hear:

"There is no standardized procedure in this company for training on the job. One of the most common methods is to place a new employee alongside of an older employee doing similar work, the older employee giving most of the information and instruction needed . . . Another method . . . is simply starting an employee in and gradually increasing the responsibility until the new employee is carrying the position for which he was employed."

Finally, to bring to a close a string of quotations that I could continue to unwind, a machinery corporation that spends a great deal of effort and money on training various classes of its newer employees says:

In connection with all our training plans and activities, we believe that the men who are really desirable and who will represent real possibilities for the corporation are those who, given a reasonable opportunity to observe, ample facilities to clinch their observations by practice, and all possible information, can stand on their own feet.

The old theory that "you can't keep a good man down" has been thoroughly and completely wrecked and yet undoubtedly the men with initiative will always outrun those who lack somewhat that excellent quality. Certainly they will take training better than will their fellows. But initiative, along with other qualities, can be developed by training. Why isn't it good economy to see that *all* workers get the training they need?

I should like to continue this recitation by citing some training methods used in connection with salesmen. Unfortunately, with few happy exceptions there would be a monotonous sameness in the base structures, though often with striking variations in the ornamental superstructures. As a general rule we find product instruction given in classrooms, or through sales manuals, perhaps accompanied by some practice selling, some talks on salesmanship, followed by a short period of observation in the field with an experienced salesman.

Training "by Absorption" Does Not Build Correct Work Habits. These excerpts give evidence of a serious undervaluing of the possibilities of training on the job, and little comprehension of the waste in manpower which is implied in training by absorption, depending on the initiative of the worker and the interest and natural teaching capacity of the worker's superior, or of the worker being observed. The assumption that correct habits of work will form naturally from observing the acts of another, even an expert, when followed by the requisite amount of experience, is entirely baseless. The late Frank Gilbreth found that of the eighteen customary movements used in bricklaying—a craft 6,000 years old—no less than thirteen were wasted and valueless. Leffingwell has shown that few clerks know the right way to affix a postage stamp on an envelope. The untrained clerk will rarely be able to affix stamps at the rate of more than 1,000 an hour—about 16 a minute. A clerk trained in the one best way, however, can easily affix 84 per minute or 5,040 an hour without appearing to be doing the greater amount of work. Yet how many office managers continue to assume that office work is simple, requires no training, and that work habits are of no particular importance.

Perhaps training by absorption works best of all in the development of supervisory material, for here a great deal of care is generally exercised in selecting those to be trained, and intelligence, initiative, and ambition are usually present. Certainly the plan is endorsed as highly successful in many important companies. One of the Standard Oil companies, for example, makes much of its six-step foreman training plan. The student progresses, during a period of about three years, from routine work in staff headquarters, through special assignments, teaching apprentices, mastery of work in one department, assisting a foreman, etc., to supervisory tasks covering several departments. The published description of the plan carries such phrases as: "Is assigned such duties as will make him familiar with"; "the second period is to teach him company policies"; "he is placed under direct supervision"; "he is instructed in handling men"; "he attends foremen's conferences," etc. The emphasis indicates that the responsibility for proper progress is almost entirely on the student. There are many examples of carefully worked out training plans—as far as logical steps in progress, well-prepared training material, and systematic check-up are involved. In countless sales organizations men are started in the office or factory, promoted, on show of "promise," to service men or junior salesmen, sent to training schools or enrolled in correspondence courses, sent out to observe experienced salesmen at work, and then given territories of their own as "trained" salesmen.

Undoubtedly, most seriously-conceived training plans have excellent features, yet we look in vain for any indication that the possibilities of training on the job have been realized. Attention *may* be ample; but if so, it is odd that it has not been mentioned. There is little to suggest that the methods of instruction have been given any thought; that any effort has been made to insure that the student learns what he should in the easiest and quickest way. Perhaps the same or even better training results could be achieved in one-half the time; perhaps the mortality among students could be greatly reduced. Until we give intelligent attention to the technique of training we cannot begin to be sure that our results even approximate the possibilities.

Training "by Intention" Puts the Emphasis on Instruction. Training by the absorption method must give way to training by intention accompanied by standardized technique in instruction. Such training involves, first of all, the familiar job analysis to determine the teaching content of the trade or the job. This job analysis, by the way, as the industrial engineers remind us, should not be a mere catalogue of duties as ordinarily performed, but a statement of the proper method of performing specific tasks. From a study of the tasks to be done we can group into blocks the tasks of similar difficulty and arrange the tasks within each block in the order of learning difficulty. C. C. Via describes a device known as the "progression factor table" to insure an orderly progression of tasks varying from simple to complex.¹ The analysis also shows the information content of the job, and indicates at what

¹ Lecture 4, 1927 to 1928 series, *Foremen's Lectures*, Newport News Shipbuilding and Dry Dock Company.

step in actual manipulative operations each element of knowledge should be taught. The time to teach a fact is when the actual need arises on the job.

Training by absorption assumes that the beginner picks up the knowledge he needs from studying books, or in formal classes, or by observation and questioning—an assumption far from correct. Training by intention assumes nothing. It makes sure that the teaching points of each task are listed and then teaches each point as it is needed.

This is a fundamental point for good training technique, though the theory of job analysis is now widely accepted. Dr. W. W. Charters, Dr. John A. Stevenson, and many others have shown the necessity of following through the four steps of (1) demonstration by the trainer, (2) trial by the beginner, (3) correction of mistakes, (4) follow-up, repeating the first three steps, until correct habits of work are formed. There are some points which, though given lip service, do not seem to be followed in actual practice.

Telling Is Not Teaching; "Bawling Out" Is Not Correcting Mistakes. Many concerns which claim to be training on the job are making the mistake of assuming that showing a worker how a job is done is training him to do it. *Demonstration, alone, is not teaching, any more than telling how is teaching.* If it were, then the most skillful operator or the most finished salesman would be the best teacher. It has been clearly shown many times not only that demonstration is but one step in teaching, but also that the methods of demonstrating are of the greatest importance. In the field of insurance selling we used to believe strongly that the only real way to teach a new man was to have him do joint soliciting—that is, have a successful salesman take him out and show him how to sell. Too often, however, after the good salesman had repeatedly demonstrated, the recruit would make a miserable failure when turned loose by himself. Now we send out trained instructors to do the teaching. They make demonstration sales, yes, but they explain beforehand just what they plan to do in the sales interview, explain why, and tell the beginner what to watch for. After the interview they break down the sale into its parts, asking the recruit questions to see whether he has "caught on," explain points he did not understand, call attention to bits of strategy used, objections avoided, etc., and answer his questions. The important thing here is that the instructor breaks down the total situation into its specific elements and shows the beginner exactly how each should be performed.

In the third step in job training—correcting mistakes made by the beginner—we must also admit that the importance of good methods has not been generally recognized. Perhaps we no longer bawl out workers as often as formerly, but to say that we have any generally recognized substitute technique would be going entirely too far. There are some excellent suggestions in Craig and Charters' "Personal Leadership in Industry" and in a few other published documents. As a general thing our literature of personnel management is full of statements telling what to do, but little, very little, telling *how*, particularly as regards the teaching on the job.

Technique of Training on the Job Largely Unrecorded; Much in Existence Not Recognized as Such. Some say that good teaching, in industry as in the schools, is an art and cannot be taught. We often hear about the "born

teacher." But we used also to hear about having to be a born salesman before one could sell. No modern sales executive now believes that ancient dogma, because such concerns as the National Cash Register Company, The Procter and Gamble Company, and many of our leading insurance companies, have abundantly proved it false. The basic reason for the absence of technique from our literature and from our discussions is not so much that little exists as that we do not recognize it when we see it. Those of us who teach or are concerned with teaching are so close to the work that we lose sight of the methods in our concern for results. Such excellent results have been achieved by many companies that we cannot give all the credit to excellent selection of persons to be trained. Much of our known technique remains unrecorded, also we are unconscious of much that actually exists. As Dr. Charters pointed out years ago, we must seek out the unrecorded specifics of successful teaching practice and get them down on paper for careful study.

Some Bits of Technique. In my search for information on the technique of training on the job I received two types of responses to my request for descriptions of how training on the job was being done. Some described their training plan or system, as though that was what technique amounted to; others plead "not guilty" to having standard methods of instruction but, in telling about training work, let slip a few bits of technique which, while varying from excellent to only fair, indicate that the hope of bringing this factor in training to the forefront of consciousness is not altogether vain. A few quotations will bring out my meaning more clearly.

Western Electric Company, relay winding department: The first thing the instructor does is to place the new operator at her ease, get her located as to locker and washroom, ringing the clock, showing her a good place to eat at noon, etc. One step at a time is undertaken in the instruction. First, the disposition of material on the bench; next, the folding of splice papers. They are kept three days on this, and an instructor takes care of a class of three. Then they are passed on to another instructor who trains them in splicing. At this work they are kept a slightly longer time, and an instructor takes care of six or eight. Then they are taught simple winding, and so on step by step until they are able to make the day work rate. Then they are moved along to another group in which an instructor takes care of twelve. Here they are coached until they can make the standard piece-work rate. From this point a slow operator is placed in a group of fast operators or alongside of a fast operator with whom she becomes more or less chummy and unconsciously develops the same rate of speed.

Note particularly how they have worked out the technique for developing speed. Perhaps it may not be the best possible method, but it is a recognized, standardized bit of technique. Just how some of the other elements are taught is not indicated, but the teaching order seems to have been carefully worked out.

From the same company, coil winding department, we get, in elaborate detail, the specifics of how to do the job safely. Each of thirty-two safety rules is taught at the point in the job instruction where its application is indicated by job analysis. Here are a few of the specifics:

1. Do not wear long loose sleeves (short sleeves to elbow are preferred).
2. Do not wear wrist watches, and do not wear rings on the little finger, as they very often come in contact with the machine switch and cause electric shocks and burns, also burning jewelry.
3. Be sure the handle of the tail stock is down after chucking spool, before starting to run the machine.
4. Use thumb and index finger to tighten tail stock; do not use the little finger and third finger, as the little finger is apt to get bruised.
5. Do not talk when you have the soldering iron in your hand.
6. Do not shake the soldering iron on the floor, as the hot solder splashes on your neighbor's feet, causing burns.
7. Do not try to pack your work while the machine is running.
8. Push your chair in when you leave your place.

Again from the same company comes this bit of technique, not of training on the job, but certainly contributing to it.

Our first efforts were concentrated upon improvement of the supervisory organizations . . . We have made extensive use of conferences of sub-foremen which are based essentially on Allen's "The Instructor, the Man, and the Job," with the aim of improving the ability of these first line supervisors to teach workmen reporting to them . . . This has resulted in bringing the job training proposition directly to the supervisors' attention in such a manner that they wanted to do something about it themselves and looked to us for aid . . . They have been given an understanding of the methods by which they may do this training.

With workmen we have practiced the principle of job rotation, aiming largely toward despecialization. This same principle has been followed in developing supervisors.

Supplementing these training activities we have a plan of classifying and grading field employees, using a numerical system of indexing experience. By this means supervisors are at a glance informed of the training the workman has had and what is required for his further development. The use of this plan of grading has promoted among the supervisors much interest in job training.

In the plant of the Tennessee Furniture Corporation there is an elaborate technique for keeping track of individual training needs, which serves to keep the shop superintendent and department foremen as interested as are the department instructors. I quote:

We have devised a method for keeping an inventory of the skill in each department. We make out a chart for each department, and for the first rating the shop superintendent, department foreman, and department instructor decide on the skill of each man and stick various colored pins accordingly. Then once a month the foreman and the instructor make any revisions that they think justifiable.

Also from this sheet is made up the training budget each month. For example, on the Mattison lathe set-up at one time it was found that we had only one man capable of doing this work. It was the plan of the instructor to take someone else who was a good knife grinder and work him at odd times on set-ups for this machine until he was capable of doing the job. Likewise, on all jobs that were not properly guarded, we outlined training to cover.

The color of the pins vertically on the chart shows how well the jobs are guarded, while the color of the pins horizontally denotes the skill of the various

operators. We found that both foremen and superintendent watched these charts very carefully.

Teaching Teachers How to Teach. At the Scovill Manufacturing Company, good training results have been achieved largely because of the emphasis which has been put on teaching methods. When the training director was a boy of seventeen, learning to be a machinist, he suffered under a foreman who assumed that telling was teaching. Whether as a result of that experience or not, he is now making sure that no apprentice under his charge fails for lack of correct instruction. He has analyzed exactly what he wants to teach each boy on each machine as well as in each trade. Then he has taken the men who must do the teaching and has taught them how to teach.

At the Newport News Shipbuilding and Dry Dock Company the problem of teaching instructors how to instruct is considered of equal importance with determining what should be taught. I quote from a talk by C. C. Via before a foreman's group in his organization.¹

Imparting new ideas to others is of itself an art by no means possessed by all. In our course on methods of teaching the instructors learned that many times a full, clear and direct explanation left the learner hopelessly in the dark, and that the usual brief and hasty explanations encountered in the shop were even worse. They also discovered that a careful demonstration of a manipulative process frequently went wide of the mark. Apparently trivial details often turned out to be the most important factors in instruction. They had brought home to them the fact that, when they stood in front of a person to show him a process, to that person every move was either reversed or upside down. They also discovered that the average person can assimilate only about eight new ideas at one bite—if more are to be taught the lesson must be divided to avoid mental indigestion.

In this school they learned the four steps necessary to put across a new idea, namely:

1. Preparation of the learner's mind.
2. Presentation of the idea.
3. Application of the new idea to the learner.
4. Testing the thoroughness of the learner's understanding of the new idea.

They were also coached in the different methods or tools used in carrying through each of these four steps.

Leffingwell, in his admirable discussion of "The Office Supervisor's Part in Training," outlines clearly the six important and necessary steps in teaching the job to an office clerk.²

Developing Technique in Department Store Training. From the department store field comes one of the best and most complete programs for training on the job, with some emphasis on technique. In Kaufman's department store, Pittsburgh, training is recognized as a primary function of every person in a supervisory position, and the ability to train is one of the major factors considered in judging the worth of an individual or his fitness for promotion—this by executive order from the president. No training job is allowed to

¹ Lecture 4, 1927-1928 series, *Foremen's Lectures*.

² See p. 809.

be so big that it takes the executive or supervisor away from other important duties, but it is considered just a part of his regular job.

The most significant principle sponsored by the store is this: Every training job should be done by the person best fitted to do it. That is, within a department, each position for which training must be given is divided into specific training tasks, which are assigned according to the training capacity of the various individuals within the department. For example, when a new girl comes into a sales department, a number of persons take her in charge in rotation. First there is a coach to introduce her to her job—make her feel at home, so to speak; then a stock location coach, followed by a merchandise information coach, a technique of selling coach, etc.

The technique of installation is as follows: First the president calls a conference with the merchandise manager and personnel manager, at which training needs of a department are discussed and, if necessary, the training program is sold to the merchandise manager. Then the merchandise manager calls a meeting of the particular department buyer, the personnel manager and the head of the training division. They sell the buyer and pick the man in the department who is to be in charge of training. The buyer then calls a meeting of the training division manager, the training supervisor who is to assist in the work, and the selected trainer. At this meeting they sell the program to the trainer, pick out a coach for each training job, and make plans for the training.

The training division now gets together the training material required and sets up the methods to be used in teaching it. When this is ready the training supervisor and the department trainer assign a particular training job to each coach, according to individual fitness. Finally, the supervisor teaches the department trainer how to train his coaches.

There are other important elements in the total training program, especially those which have to do with appraising conditions within a department before training begins, and the follow-up after training begins (1) to see that the training is carried on according to plan; (2) to correct any faults which appear; and (3) to appraise the results secured; but these are not pertinent to the subject of our particular interest.

We are probably indebted more to Dr. W. W. Charters than to any other one person for such specifics of training technique as have been recorded. In the insurance field many training men give him credit for directing their thinking to the problem of training technique. John A. Stevenson, who has been an outstanding leader in the training field, and whose book, "The Project Method of Teaching,"¹ has been of great help to those seeking light in this field, has often publicly acknowledged his debt to Dr. Charters.

It is natural, therefore, to turn to the fields where Dr. Charters has been at work in order to find the kind of material which can properly be called technique. In a recent publication, "Personnel Research in Department stores,"² there are numerous references to such material, mostly contained

¹ The Macmillan Company, New York, 1924.

² The Research Bureau for Retail Training, University of Pittsburgh.

in training manuals for member stores, and in a few cases some elements of the actual training methods are detailed.

As a part of its work in devising a technique for "teaching stock" to new sales clerks, The Research Bureau for Retail Training developed a stock card containing a set of questions, the answers to which, if properly learned, would enable the sales clerk to handle her job satisfactorily as far as knowledge of stock was concerned. This card was given to the instructor or coach, not to the clerk—at least not at first—and contained directions and suggestions for teaching the answers to the clerk. For each question there was a specific suggestion regarding the methods to be used in teaching the answer. For example:

Question 1. What are the main sections in your department? Where are they?

Suggestion to instructor. Show salesperson the sections as you name them.

Among the directions to the coach we find:

Tell the salesperson to go through the stock, answering the questions for herself (this at the end of the direct instruction).

Tell the salesperson you will ask her later to answer the questions when she has had time to study the stock.

The Research Bureau learned early, it seems, that directions for instruction could not be too detailed or specific. In a discussion on teaching salespeople how to do suggestive selling, we find:

It is necessary to define quite clearly what is meant by suggestive selling, and to point out its advantages and disadvantages . . . It is absolutely necessary for a salesperson to have some definite article in mind in order to suggest effectively.

It seems clear that the more concrete the training, the better. That is, it is necessary to show in definite ways how suggestive selling can be done, whether by selecting certain articles for the salespeople to suggest, by talking over the possibilities with them and getting them to make their own suggestions, by demonstration sales or plays, or by some other specific means.

Teaching an Office Supervisor How to Train Clerks. Dr. M. A. Bills discussing the problem of training section or division heads in managing their workers, tells a very interesting story:

Most of these men have grown very slowly into the supervisory jobs. They have often worked at every job in their section. Therefore they know quite thoroughly the work to be done. But no one has ever taught them how to direct the work of others, and they have not picked it up. They usually lack flexibility and when the supervisory work is put upon them they are likely to fail because they go about it in the same way they have handled their individual work. You all know section heads who are unable to delegate work properly and who wear themselves out trying to do it all themselves. It is the natural result of lack of training.

I want to tell a story which will illustrate to you that it is possible to train executives and that supervisory ability is not innate but may be acquired. About three years ago the supervisor of a group of about thirty clerks was given an assistant to help him in the work. It was one of the cases where one department passes a lemon to another. The man was a good enough individ-

ual worker but he was a "grouch." In fact, in any contest he would have taken the prize as the worst grouch in the company. At first the supervisor had very little hope of training him in the work of supervising the division and devoted most of his time to teaching him to do the personal work which fell to the lot of any person managing that division.

One day the man came to him with a self-rating scheme. He had rated himself on all of the qualities and asked the supervisor to rate him. The supervisor considered the matter seriously and decided that he would rate him honestly and rated him very low on all the qualities that demanded contact with people. The man was very much surprised at this. It had really never occurred to him but what he got along as well with his fellows as other people did. He supposed that everyone grouched when asked to do anything and did not consider it as especially due to his method of asking that the girls in his division seemed displeased. The supervisor talked the matter over with him and they decided to see if he could be trained to get along with other people.

The supervisor started in immediately having him do a part of the supervision. When a new girl came into the office, the supervisor told him to explain the work to her, *using just about such and such language*, then to go away and leave her and not go back for a certain period unless she manifested signs of distress. Then, if she had finished the assignment successfully he was to continue the instruction *along such and such lines, using about such and such language*. If she had made mistakes he was to correct them and to *say about so and so to her*. This definite training continued until one after another all the points of supervision in the division were covered. The supervisor told me afterwards the hardest thing that he had to *teach him was to smile* when he was giving instructions or making any criticism of work done.

Last year the supervisor was promoted and the assistant supervisor has handled the division successfully ever since. However, the most remarkable part of the story is that this training was specific and not general. The man is still a grouch outside of the office. A short time ago the woman to whom he was engaged broke her engagement because of his bad temper. He has been asked to resign from two clubs because he does not know how to get along with the members and he is at present not living at home because of trouble with his immediate family. But in the office the man supervises, and supervises successfully, a group of thirty clerks and the pleasantest of relations exist.

Technique in Training Field Salesmen. This field presents the greatest obstacles to standardized training technique, but also the most fascinating possibilities for technique suited to specific selling situations. A few bits of technique taken from interviews with successful trainers are given:

1. If a new man, in figuring the premium on a policy for a prospect, makes a mistake and quotes the wrong amount, I cut in with: "Just a minute, Bill, you meant to say \$32 instead of \$38, didn't you? I know it was just a slip of the tongue, but I want Mr. Prospect to get the right idea of the low cost, etc." After we get outside I call Bill's attention to the mistake and warn him to be careful; such mistakes may cost him business. I make a note of it and that evening I have Bill figure out a lot of premiums so he'll not make the same mistake again.

2. Teaching a new salesman to plan his day's work is one of the most important things in our training plan, and one of the easiest, as far as building a habit is concerned, but one of the hardest to get him to think through properly. We have some rules and guiding principles about planning which

he has read and studied before starting out. I have to teach him how to apply them.

On our second day of training I have him carry the dealer record book and tell me just before we enter each store, just what I have planned to accomplish, as shown by the symbols (which I have previously explained to him). That shows him how much importance I attach to planning and starts the habit of consulting the book and going into each store with a definite selling plan in mind. When the call is over, and we are out in the car again, I ask him to check up and see if I accomplished my objectives. That gets to be an absorbing game and sells him on the idea of definite plans.

That night, and for several succeeding nights, I give him exercises in planning. First I take a few sample dealer records and explain the significance of the various facts in the record of past sales and the personal data about the buyer. Then we plan the next day's calls together. That involves discussion of the rules for planning—how to take into consideration such factors as national and local advertising, special prices, "free deals," competitive activities, etc., all the time keeping in the forefront the territory quota for the various items he has to sell. As I take up each card I point out the important facts and ask him to suggest the proper objectives to be set for the call. If he makes good suggestions I accept them enthusiastically. If he misses the ball, so to speak, I make him think it through by asking questions until he sees the point and realizes why he was wrong.

On the second night of planning I give him the whole list of proposed calls and have him write out the plans on paper. Then we go through them one by one, and I raise all kinds of objections to see if he really understands why he made each plan. As soon as he is able to justify his plans by giving good reasons and quoting the rules, I figure he has had enough.

It takes time to teach planning, and some experience on the salesman's part, of course, for the rules do not cover everything and the facts about the local situation and the dealer's personal characteristics cannot all be put on the cards, but by going at it systematically this way the beginner soon learns to use good judgment in combining all the facts in determining upon his objectives and his sales methods for each of twenty or more separate calls every day. The game of checking up each day on how closely he was able to carry through his plans remains highly interesting, because it gives him a measure of his progress.

What We Still Need. Under the present conditions as regards training technique we are not in a position to attempt any formulation of principles or standards. What we need, and what I hope these examples have emphasized, are specific, detailed descriptions of just how effective training has been done on thousands of jobs under all sorts of conditions and circumstances. Combined with these data we need the records of hundreds of experiments in training methods built upon the principles and theories advanced by our leading educators.

We who are seeking to discover and perfect technique must always and forever keep asking the question: *Just exactly how* is it done, or to be done, as well as what, and when, and where? We must ask the expert teacher: Just what do you do in these specific situations? If he or she is unable to tell us—probably even if able—then we must have trained observers set down the methods wherever that is possible. Perhaps we must call upon the latest scientific recording devices, so that verbatim records and motion

pictures can provide the objective, uncolored facts of actual technique under natural, normal conditions. The presence of an observer often changes the training conditions seriously.

In the insurance field some companies are now securing stenographic records of the beginner's actual sales presentation through the courtesy of business friends who provide bona fide prospects and also a concealed stenographer. The purpose is to discover the salesman's weaknesses, and the stenographic record is actually gone over with him as a basis for mutual agreement as to the further training which he needs. On the other hand, we have some few companies which make reasonably sure of what the recruit will do and say under ordinary circumstances by forcing him to learn by heart the prescribed demonstration and sales talks, even to the fine points of voice pitch and inflection, arm and hand movements, and facial expressions. The training in these cases involves more of the old classroom practice recitation than of training on the job, yet the plan suggests some points which are equally important in field work.

Undoubtedly we are breaking away from the now largely discredited schoolroom methods, products of the past, which have almost completely dominated industrial training. But it is still supposed in many companies that training requires formal textbooks and manuals, classrooms and blackboards, lectures and examinations; that training is concerned with information—what to do, rather than how; that information can be imparted in logical order regardless of the need for it or its relation to the job in hand; that lectures and demonstrations on how to do the task should enable the student to do it; that the student who does not learn by these methods is lazy, indifferent, or mentally incompetent. We still hear occasionally of the sales executive who hires an outside go-getter to come in and train his salesmen by lecturing to them once a week on salesmanship and character analysis, while he himself goes out to play golf, patting himself on the back because he can now say that he gives his salesmen the best possible training.

If we must train, it is certainly the part of wisdom to do the job well. In recent years we have learned something about the objectives of training, the preparation of training material, the necessity for training on the job, and the responsibility of every executive for carrying on such training with his subordinates. We are even saying, quite boldly, that teaching is the primary function of every executive. When we get even an important minority of executives to admit that, we shall seem to have won a great victory. But it will be a hollow victory if our executives put on the form of godliness yet lack the power thereof. When their workers ask for the bread of training, they are likely to get stones. We must not slack our efforts in the training field until this acceptance of the responsibility for training is followed by acceptance of the fact that correct teaching methods are even more important. Our training program will be complete when, and only when, we have developed the technique of training on the job to the point where our training (1) fits the job; (2) reduces learning time to a minimum; (3) inspires the workers; (4) and develops the most effective work habits. It is such training that will pay real dividends to the employer and to the worker.

Summary. I have suggested, without intending to be hypercritical, that much of our present job training is ineffective and more costly than necessary because (1) beginners are expected to absorb good work habits through watching experienced workers; (2) industrial educators have not realized the importance of good teaching and have, therefore, left job instruction to those who have no great interest in teaching and who certainly have not been trained in the technique of instruction.

I have made this seeming indictment in the face of the facts that probably more attention has been given to method than appears to be the case, and that much teaching is probably done by men who have something of a natural flair for it.

Industry has failed to keep step with the progress in educational methods in our public schools, where problems to be solved take precedence over abstract principles, although industry has had a laboratory for experimentation which far surpasses that of the public schools.

Following this statement of present conditions generally, I described some advances toward effective training methods and pointed out that we need a great deal more experimental work along the same lines. I should like in closing to suggest a sort of platform or program as a basis of further effort to bring training technique into its rightful place in industrial and business training.

I shall assume that, as a preliminary matter, the particular job has been analyzed for its teaching content and that I know what must be taught in terms of the knowledge and skills required and the personal characteristics either necessary or desirable for success. My objectives are therefore clear. It seems to me that the first point in good technique is: Arrange the instructional matter and teaching plan to correspond with the order in which problems arise in doing the job because, of course, I would use the project method of teaching.

Second, from a study of the tasks to be done and the things to be learned in connection with each problem, I would arrange and teach them in the order of learning difficulty. I would know, and record on my training plan, the proper point or step in the teaching process at which each element of knowledge should be taught, because I would recognize that a fact is learned with least effort when the need for that fact has risen in the process of solving a problem.

Third, in teaching each element of manual or even lingual skill (for it applies in teaching selling), I would demonstrate under job conditions just how the thing should be done, and repeat the demonstration until the student was ready to try it for himself. I would judge his readiness by the questions which he had asked in response to my invitation, and by his answers to my questions. I would have the essential points of each step in mind and on paper so that guess work would be eliminated.

Fourth, I would let the beginner try, correct his mistakes one at a time by redemonstration and further explanation, and continue this process until the student had reduced the acts or series of acts to a habit.

Fifth, I would measure the individual student's learning ability as accurately as possible and endeavor to teach in each lesson only as much as the

student could grasp. I would teach slowly or rapidly, depending on the student, and I would make sure, by drill and examination, that each element was learned before passing to the next.

Sixth, I would maintain, at all costs, a personal interest in the beginner's progress and an attitude born of patience with and understanding of his human tendencies to make mistakes and to do as little work as possible.

Finally, I would keep an experimental, inquiring attitude toward my teaching methods, introducing new bits of technique suggested by others or by my own experience, and carefully recording the results secured. Thus I would contribute my share to the advancement of knowledge regarding the technique of training on the job.

THE FOREMAN'S PLACE IN A TRAINING PROGRAM

BY FRANK CUSHMAN, *Chief, Industrial Education Service, Federal Board for Vocational Education*

There are two fundamental problems involved in any plan of education or training for an industrial organization: (1) The problem of selecting and upgrading a selected group of members of the organization to fill higher and more advanced positions as vacancies occur, and (2) the problem of maintaining a reasonably high degree of efficiency in the entire personnel of the organization. The latter problem involves the securing of efficient production in the plant and also efficient handling of personnel factors which affect morale and efficiency on the job.

A Limited Number of Ambitious Employees. In any industrial organization there is always a limited number of individuals who are more ambitious than the average employee. In number these individuals will probably not exceed 10 per cent of the entire working force. Efficient operation of the plant, however, depends upon the best efforts of the entire personnel.

This small number of ambitious employees usually includes persons of superior ability and intelligence who are potentially capable of promotion. From the standpoint of conservation of human resources, such people should be encouraged to prepare themselves for promotion and advancement in proportion as there are opportunities for realizing their ambitions. In other words, they should be recognized to the greatest possible extent in connection with any policy for promotion from within the organization, since under such conditions this group is the reservoir on which the organization must draw. If an organization has no such policy the entire matter of promotional training becomes a liability rather than an asset for two reasons: (1) It creates dissatisfaction in the organization, and (2) it functions in training men, who, in order to secure promotion, must leave the organization which has trained them. In practically all situations, however, the great majority of the employees of any organization are of average intelligence and many have limited ambition for advancement. It is fortunate that this is true, because the number of jobs available on the higher levels is in turn limited. Most people who work have to be satisfied as well as possible and for long periods of years with doing ordinary work with relatively limited responsi-

bilities, and contrary to the theoretical idea, most of them are satisfied as far as the job is concerned.

The Relative Size of the Two Problems. From the standpoint of training, it is roughly estimated that not more than two to five per cent of the entire working force needs to be considered from the standpoint of definite training for promotion, under static organization conditions. These persons by reason of their intrinsic intelligence and their ambition are able to derive benefit from taking advanced instruction of a technical character which they may need when they are advanced to more responsible positions requiring a greater command of technical subjects and a better grasp of management problems. From this standpoint, it may be assumed that from two to five per cent of the entire personnel of the average industrial organization may pursue organized technical courses with promotional objectives in mind and thereby contribute to the efficiency of the organization by which they are employed. For the remaining 95 to 98 per cent of the working force the training problem, so far as the work of the plant is concerned, is, to a very great extent, one of handling incidental, unorganized or casual training on the job on a job upgrading basis. There are therefore two distinct problems which have little or nothing in common. The kind of training referred to for this 95 per cent of the working force is the kind of training which must be given in connection with the work of the plant in order to maintain a reasonable degree of efficiency in production. This training must be given whether the workers involved are ambitious or not.

Two Types of Individuals. Individuals who would be included in the two to five per cent of the working force are potentially equipped for positions as minor executives. Such individuals voluntarily attend evening school classes, buy books and study them at home during their spare time, or enroll in correspondence school courses without any pressure being applied by the persons to whom they are responsible in the plant.

The individuals who are included in the 95 to 98 per cent of the working force would include all of those persons who are more or less satisfied with ordinary jobs and who lack sufficient ambition to attend evening schools or avail themselves of other agencies which can assist in qualifying them for better jobs. The sort of education and training which must be carried on with this group is, as stated before, a necessary part of the work of some one in the plant and is carried on in some way in every plant whether the fact is recognized or not. The special content which is handled in connection with this incidental instruction on the job is intimately bound up with the knowledge and skill which foremen and experienced workers possess. In most cases this type of content is not found in textbooks. It is really a part of what has been termed the job intelligence of an experienced workman and is developed in any workman only through experience on the job under competent supervision.

Possession of Information Does Not Insure Ability in Performance. The possession of technical information in itself does not assure any ability to apply that information on the job in specific situations. Technical courses and in fact almost all organized courses of study or training can hope to do little more than place an individual in possession of information, except in cases where information can be practically applied and experience in using

the information can be secured. After this process has been completed the subject may be fairly said to have been learned. In certain lines of work, as, for example, related trade mathematics for machinists, new information can be applied by working out problems in advance of dealing with a practical job in the shop which calls for the same kind of a computation. Courses in industrial management, for men who are not even foremen, offer little in the way of opportunity to apply the information concerning management. Very often five, ten, or more years elapse subsequent to the completion of courses in industrial management before the men enrolled secure a promotion which enables them to apply the information secured.

General Characteristics of Technical Courses. The kind of technical information which is ordinarily included in organized technical courses deals for the most part with general principles. While the specific technical knowledge needed on a particular job involves some general principles, it is a very difficult matter in most cases for a man of limited education to apply general principles to a concrete situation. From the standpoint of good instruction it is far better to teach a man first to deal with specific situations and later on help him to see what the general principles are that characterize the different jobs which he has done. The specific and extremely concrete applications of technical knowledge which are needed on the job can best be handled by utilizing men as instructors who are themselves expert workers in the particular occupation in question.

What the Foreman Knows. The competent foreman possesses a great deal of special skill and information which he uses in dealing with specific situations. This special information is not necessarily in the possession of the higher plant executives and engineers. From the practical operating standpoint, he knows just about what his equipment will do, to what extent it can be crowded with safety, and what sort of troubles are likely to develop if it is not handled in particular ways with proper safeguards. An illustration of what is meant here is found in an individual who has owned an automobile and driven it himself for four or five years. He knows just about what his car will do under different conditions of weather and on different types of roads. Unconsciously, he knows exactly how to handle that car in difficult situations. In fact he knows more about that car than he knows about any other automobile in existence. Provided he is a skilful driver, he can handle his own car which he has been driving for a period of years with a greater degree of skill than he can handle any other car. He can, moreover, handle it with a greater degree of skill than any other person can handle that particular car. The situation with respect to every piece of equipment in a shop is somewhat analogous to that of the automobile. A man who is intimately acquainted with a machine tool, a hydraulic press, a steam boiler, or other apparatus or equipment, has a practical knowledge of how it may be expected to perform and how it should be operated which is different from that which any other person has. Where a man is thoroughly acquainted with a machine tool or other mechanical device he acquires an ability to anticipate troubles before they develop, and when anything goes wrong, he can locate the trouble quickly and knows what to do to correct the difficulty. This sort of knowledge of equipment—what it will and will not do under given conditions—is a

part of the job intelligence which a foreman has and which a superintendent cannot be expected to have concerning all departments of a plant. Moreover, this sort of practical knowledge on the job is, to a very great extent, what keeps a plant running smoothly and efficiently. In proportion as the foremen are thus competent and expert in handling their equipment, the entire plant will be free from trouble, breakdowns and accidents.

How Job Intelligence Is Secured. A foreman does not possess job intelligence by virtue of the fact that he is a foreman. He possesses job intelligence only when he has come up through the organization and has passed through working experiences on the job which have brought him into intimate contact with the work and with the equipment. It is a significant fact that the best foremen do grow up in the organization in just this way. From time to time many attempts have been made to prepare young men for foremanship and other executive positions so that they could enter upon their duties as foremen or superintendents immediately upon completion of a preparatory course of training. It is a well-recognized fact that all such attempts have for the most part failed, and the fact remains that foremen are selected from the working force. Whether the fact is recognized or not, they are selected because of their job intelligence, in addition to their other qualities such as ability to handle men and work in harmony with the organization.

How Can the Foreman's Job Intelligence Be Utilized? The question naturally arises, How can the foreman be utilized in connection with the training problems which exist in every industrial organization. This question will be discussed from two standpoints: (1) With respect to the selection and handling of the 5 per cent who are in line for upgrading and (2) with respect to the training of the 95 per cent for efficient performance on the job.

What the Foreman Can Do for the 5 Per Cent. It does not seem to be possible to utilize foremen directly in handling the instruction and training of the 5 per cent of upgraders. Such education and training for promotion is, after all, a matter which lies outside of the average industrial organization. If it does not lie outside of the organization in all cases, there are probably more cases where it lies outside the organization than inside of it. In perhaps the majority of cases, ambitious and progressive men who are desirous of equipping themselves for promotion avail themselves of educational opportunities of their own initiative. The number of plants, however, is constantly increasing where definite attention is given to work in this field. For example, in one large organization the established policy is to reimburse employees for all expenses incurred by following through any course of instruction in any subject. In addition to the reimbursement, the company furnishes advice to the men with respect to their educational work, and in a number of ways endeavors to encourage ambitious employees.

The foreman may, however, be utilized as an instructor provided there is an evening or part-time school organization where he can function as an instructor with men from the plant where he is employed. Another very important function which he can perform with the 5 per cent is to help in the selection of men potentially qualified for upgrading and advancement in the organization. It is entirely reasonable to assume that the foreman, because of the close association with men in his department is

likely to size up his men from the standpoint of the characteristics heretofore discussed of the 5 per cent. In addition to helping in the selection of these men and perhaps assisting in some way as an instructor for them, he is in a position to encourage them to go ahead with their work and pursue their studies to the point where they will be nearer to realizing their ambitions. Conversely, the foreman can exert a very great influence in discouraging men from making any effort to better their condition, and can, if he cares to do so, neutralize, to a great extent, all of the efforts that others in the organization may make to encourage them.

What the Foreman Can Do for the 95 Per Cent. So far as incidental training on the job for the promotion of operating efficiency is concerned, it is safe to say that the foreman always has this job to do under average conditions. He may, of course, utilize assistant foremen or some experienced workmen to carry part of the load, but, in the last analysis, it is the foreman's responsibility to take care of the unorganized, fragmentary, and somewhat disconnected instruction on the job which is necessary to get the job done and maintain production. Such being the case, the question naturally resolves itself into a consideration of what can be done to enable the foreman to take care of this instructional job more efficiently. As is the case with almost every other kind of a job, the actual value of the job which the foreman will do in taking care of his instructional responsibilities will depend upon his attitude toward his job and toward the company. In order for the best results to be secured, there must be a *real* rather than an *assumed* interest in the work and the foreman must do a good job because he *wants* to rather than because he *has* to. In other words, a good job in this field by the foreman means the most genuine kind of cooperation with the management. There is a great deal of evidence to support the statement that this sort of cooperation cannot be secured by orders or by the direct exercise of authority. It can be secured only when the proper appeal is made to the foreman's pride in his work and through the utilization of such well-known interest factors as job pride, confidence in the management, and the proper placing of responsibility. The kind of instruction referred to in the preceding paragraph, the competent foreman recognizes as a part of his responsibility. He is potentially interested in doing a good job in his own field of work. The principal difficulty is that he is, as a rule, more or less inarticulate with respect to the whole matter. The question, therefore, is largely one of assisting the foreman so that he can do a better job in this field and of building up his confidence in his ability to do a good job. In the case of foremen who have never thought very seriously about what their responsibilities are, because of never having had their responsibilities analyzed and discussed by someone competent to do so, it is a relatively easy matter to secure their interest and cooperation if the right methods are used. Experience has indicated that where foremen are given a little insight into the methods of instruction used by experienced and successful teachers they are usually very appreciative of this help and anxious to apply good instructional methods for the purpose of doing a better job in the plant.

The Foremen's Conference. One of the most practical methods that has thus far been discovered for accomplishing some of the preceding objectives

is the foremen's conference, and this may well be considered as a desirable first step in the development of any program of education and training in an industrial organization, provided the plant management is interested and has the proper appreciation of the functions of foremen's conferences. It is, of course, utterly useless to carry on any program of foremen's conferences in a plant where the higher officials of the company are unsympathetic, or antagonistic toward the idea. The foremen's conference has been very extensively utilized in all sections of the country, and, in a very great majority of cases, the results secured have been of far greater importance and significance than were anticipated in the beginning. In many plants where foremen's conferences have been held and no follow-up program was organized the program has stopped temporarily because there was some uncertainty as to what the next step should be.

Suggestions for a Follow-up Program. There are several desirable types of activities which can be organized as a follow-up for a series of foremen's conferences in order to keep interest in education and training alive and capitalize to the greatest extent possible the results of a series of foremen's conferences. Among these activities the foremen's club is meeting with considerable favor. Competent leadership is, however, indispensable if a foremen's club is to function in any important way. Without leadership of the right sort a foremen's club may produce negative as well as positive results. A continuing program of foremen's conferences is an alternative plan. The success of such a program is, however, dependent upon having a leader who is resourceful and not likely to run out of ideas after a short period of time. There is a great deal of practical, as well as potential value, in the right kind of instructor training courses for foremen. The kind of assistance that such work may be expected to render to the foreman is a logical step in enabling him to assume and properly discharge the responsibilities for training which are logically a part of his job.

Problems of the Management. One of the problems which the higher executives of an industrial organization should recognize and solve has to do in the first place with creating a desire on the part of foremen and other minor executives to enter into a program of foremen's conferences and instructor training courses, and secondly, with making the conditions such that it will be possible for them to do this under competent leadership.

Another problem of the management is to see that those persons in the organization who are potentially capable of qualifying for advancement in the organization are provided with an adequate opportunity for securing suitable opportunities for education and training. For this group, which, as stated before, will probably not average more than 5 per cent of the entire working personnel, the company can well afford to set up the best possible plan of selection, using the practical knowledge and judgment of the foremen as a check upon the system used, no matter how scientific it may appear to be. After the persons have been selected, the company can well afford to encourage them to take advantage of opportunities offered through evening classes in public schools, correspondence courses, university extension courses, or special technical courses, organized and operated within the plant itself.

A Mainspring Is Needed. The best watch movement ever manufactured is of no value, as a time piece, without a mainspring. An educational program in an industrial plant needs a mainspring. A program developed along the lines indicated in this paper can best be developed by an individual who has enough tact and judgment to develop it in such a way that the demand for each new activity appears to come from the men themselves. Some of the most outstanding successes have been achieved by men who have developed their programs by getting the persons directly concerned around to the point where they wanted to do the thing themselves. This is of course merely an illustration of good management which successful persons responsible for the work of others utilize consciously or unconsciously.

Some Common Mistakes. A great deal of time, money, and effort has been expended in setting up general educational programs or providing educational opportunities for workers in industry merely upon the assumption that education in the abstract was a good thing for everybody. There are undoubtedly some values as far as morale is concerned which are derived from general programs. It is somewhat difficult, however, to discover in what way a series of lectures on Shakespeare's plays has any direct bearing upon the work of a marine engine and boiler shop. Some of the employees may feel that the company is very generous and considerate in bringing a professor of English to the plant for these lectures, but there is always a small percentage in any group which, under such conditions, will grumble about the whole matter and ask why, if the company wants to do something for the men, they do not distribute the money in the pay envelopes which they pay to outside lecturers. It makes not the slightest difference whether such general educational activities are organized in a plant or not, so far as the foremen's immediate instructional responsibilities are concerned. Even in extreme situations, where working time is spent in educational and recreational activities, the foreman's responsibilities for instruction on the job are not modified in the slightest degree. Such being the case, it cannot be claimed that miscellaneous inspirational or general education activities can have any particular bearing upon the incidental education and training which is going to be given anyhow on the job by the foremen to practically all members of the working force in the plant.

Coordinating Technical Training with Opportunity. So far as technical courses are concerned, the mistake is often made of providing an opportunity and then making the opportunity available to all persons in the organization regardless of their ability to derive profit or benefit from the work. When large groups of persons spend time and effort in preparing themselves for some other job, which for most of them is entirely out of their reach, the practical result is that a lot of them are made dissatisfied and unhappy.

This indicates that the sensible thing to do is to have some system of selection for those who are to be encouraged to secure advanced technical instruction or training as a part of a plant's training program. An illustration of the results of training large numbers of people for jobs that are out of their reach is found in the case of a certain company which employed a limited number of foremen. A private educational agency organized a foremen training course in the vicinity of the plant and by some means or other

secured most of the competent workmen from that company as students in the course. The principal purpose of the course was to qualify men to become foremen or superintendents. After completion of the work many of these men left the employ of the company where they had good jobs and good working conditions merely because they had become obsessed with the idea that it would be foolish for them to continue working for that company unless they could secure an immediate promotion. The net result in this case was negative. The values to the industrial organization, as well as to the individual men employed by it, were deleterious rather than constructive. In other words, the company and the men employed by it would have been better off without this so-called educational program which did little more than make a group of men dissatisfied with their jobs and helped to disrupt the organization.

Confusion of Objectives. There is evidence that considerable confusion prevails in mapping out programs of education and training for persons employed in industry. This confusion, to a very large degree, results from a failure to analyze existing situations and determine what it is that needs to be done. The practice is all too common of seizing upon an idea and developing it without any particular regard for the results which may be expected to come from the development.

In handling problems of education and training in industry, procedures are followed which would not even be considered in handling matters concerning production and sales. The procedure which appears to be most nearly correct and scientific is first to analyze the needs and determine what it is that needs to be done; second, to devise ways and means of accomplishing the objectives as determined; and third, to set up conditions which will make it possible to accomplish these objectives. In carrying out this procedure the management has definite problems and responsibilities. In solving these problems the foreman can make a contribution which no other group within the organization can make. One outstanding problem of the management, therefore, is to train and equip its foremen to discharge the responsibilities, in the field of training, which are an integral part of their jobs, in the best and most efficient manner possible.

TRAINING PROMOTION PROSPECTS

By BYRON F. FIELD, *Superintendent, Training Division, Commonwealth Edison Company*

It is axiomatic that every employee, if properly selected, has promotional potentialities. Most employees assume this as do some managers. However, training all of those in a given grade to proficiency sufficient for them to fit into the next higher grade is not generally practiced, and where practiced, is usually confined to the lower ranks.

Definite job-training material, secured by job and difficulty analyses, and a program for its presentation to employees has been developed in many industries. This program may be carried on on the job with the employees'

supervisors acting as coaches or instructors, in a special location with special coaches, with or without written material for the permanent use of the employee. In most cases, however, regardless of the method used, the practice is first to train the employee thoroughly in the position which he is occupying, and to follow this by training, in part at least, in the functions he would perform in the next higher grade.

The procedure of surveying the field within a company in order to select a limited number of promotion prospects for executive and subexecutive positions early enough to permit special training in advance has not been widespread. Often management has waited until the incumbent died, resigned, or was retired, and then looked around for "some likely fellow to take Bill's place." This has resulted in so many disappointments that an increasing number of industries have adopted one or more of a variety of methods to assure having trained men to step into the more responsible positions.

The Understudy Method. Probably the oldest, as well as the most widespread, method for training men for higher executive positions is the so-called understudy method. While usually not conducted formally, and while as often as not carried on as a matter of convenience, the plan does give considerable training. Every executive, consciously or unconsciously, feels that he has one or more subordinates who should be promoted to his position when he leaves it. The executive then formally or informally gives this prospect understudy training in order to acquaint him with the duties and responsibilities of the higher position. Under this plan, the prospect, who frequently is the assistant of the one holding the position in question, is admitted into executive conferences, reads reports addressed to or sent out by the executive, and even takes his place in case of his absence, with or without limitations as to the extent of his authority and responsibility during that time.

Training of this sort is the personal responsibility of the one being understudied. Since this is true, the thoroughness of the training given, the breadth of view presented, and the points emphasized are a direct reflection of the attitude and interest of the person doing the training. Generally speaking, he will stress the things in which his greatest personal interest lies, and minimize the others. Thus, actually, he is creating an understudy with points of strength and weakness similar to his own—and with relatively little broadening experience.

Executive Information Files and Interviews. Going to the opposite extreme, a growing number of companies are taking a broad company view of the executive training and promotional field. Some companies attempt to maintain a file in which the education, training, and experience of each of its executives and potential executives is listed. An effort is made to keep this file up to date so that on short notice, when a vacancy occurs or when one is anticipated, the person with the necessary qualifications to take the position may be readily determined.

In a few organizations, a responsible executive, in whose office the file is kept, maintains an interview schedule. He regularly calls in each of the men whose records he has for a discussion of his activities, interests, prospects, and

ambitions. He records his reactions to each man interviewed, and these are also considered when promotions are contemplated.

Specific Executive Promotional Training Courses. A newer device which is coming into constantly increasing use, is the executive training course set up to provide a routine procedure for the training of promotional prospects. Industries conducting such courses select prospects from membership in them, with or without a definite position in mind for each prospect at the termination of the training period. Men selected for training may simply be considered good promotional material.

In some such courses, the men selected may be rotated between various departments at intervals sufficiently separated to allow them to become reasonably well acquainted with the functions of, and methods followed in, these departments. Some companies provide that those taking the course shall be given responsible positions carrying definite authority in each department visited. Others provide that the prospect shall be given a staff position to handle special assignments for which he can readily be fitted.

In some organizations this course is supplemented by, or supplements, classroom work in such courses of instruction, technical or otherwise, as may fit the employe to assume a promotional position. Some such courses are followed by formal examinations.

It can be seen that the basic aim of such courses is to increase the fund of general information regarding the company's financial and operating methods, as well as its policies, rather than to impart a mass of information regarding a single department. This seems to be based on the idea that what is desired in an executive is a broad understanding view of company and interdepartmental problems and policies. With this, provided the prospect has keenness of mind, it is assumed that he can rather speedily adapt himself to the new position.

Since the training is not directed toward a specific position, various practices as to the degree of assurance or inference that the promotion will follow the training period are used. Generally speaking, the companies inducting the smallest number of men relatively into the course and giving them the greatest degree of authority during the course, most often make selection for membership tantamount to an assurance of promotion. The inference is usually felt that promotion will follow completion of the course even when the assurance is not given or is denied. This so frequently results in maladjustments if the promotion is not forthcoming, that many concerns will not use the method at all.

Background Executive Training Courses. While the companies using the method just described ordinarily induct a relatively small number of men into the course, other industries use more general stimulating devices in order so to upgrade the majority of their minor executives that many of them, with a little additional specific training, may theoretically be fitted into a higher position in the department which employs them. It is felt that by this means the entire subexecutive group is improved by receiving useful information and by a better understanding of the company, and its problems. Where such courses are given, there is no inference that immediate promotion will follow completion.

Cooperative Educational Activity. Many companies encourage their employees, financially or otherwise, to take additional educational work either in company or publicly maintained institutions. Here, the aim is to broaden the employee's knowledge either of business fundamentals or of the specific field in which he works.

Present Trend. The answers to a recent nation-wide questionnaire indicated that more industries are interested in the methods of training their higher executives than in any other class of training. Apparently the training of the men in the lower ranks is felt to be well established and has proven to be so worthwhile that similar or greater benefits are assumed to follow from a more conscious training of the men in the higher grades.

DECENTRALIZED EMPLOYEE TRAINING¹

BY W. J. DONALD, *Managing Director, American Management Association*

The training of employees in business is as old as the relationship of master and servant, but methods have been changing with the changes in industrial and commercial organization, and of recent years have been affected substantially by modern principles of educational psychology.

The training of manual workers has thus far received much more attention than that of those often referred to as "white-collar workers," such as retail sales people, office workers, and persons who sell to retail stores, to the consuming public in their homes and offices, or to institutions or other manufacturing companies.

Comparatively speaking by far the greater percentage of those gainfully employed in America have heretofore been engaged in manual occupations, but the distribution of workers is rapidly changing because the increase in the size of business is increasing the number of office operations more than in an arithmetical ratio, and the keenness of competition has brought about a rapid increase in the number of sales people. Consequently the attention which heretofore was devoted solely to the training of manual workers is now gradually being shared equally or even to a greater extent with the training of commercial employees.

It is only natural that the training of manual workers has acquired a certain stability which is attended by distinct disadvantages, particularly a comparatively marked lack of progress.

Training of Commercial Employees Comparatively New. The training of commercial employees, that is, office workers and sales people, is comparatively new, and while it suffers somewhat from the traditions that have been borrowed from the field of training manual workers, nevertheless in many quarters the training of commercial employees is being attacked from a new angle by men scientifically trained in educational psychology and methods, and there is distinct evidence that the recent progress in such training is having a definite effect on the training of manual workers—so much so that educational directors in charge of training manual workers are

¹ Reprinted by permission from *Mechanical Engineering* for November, 1930.

reevaluating their objectives and methods and adapting to their situations the methods which are being applied in the training of sales people and office workers.

As a management policy, the training of workers is becoming more and more important. In the first place, the stoppage of immigration by the World War and its restriction since have limited not only the supply of manual workers but also that of office employees and sales people. No longer can an ample supply of unskilled workers be secured from the steady influx of immigrants. Wages have rapidly increased. A rapidly increasing percentage of foreign born speak English, this percentage being influenced by the fact that the annual influx of non-English-speaking persons is relatively much less important in relation to the total of English-speaking than before the war.

High wages for manual work in factories made manual work for females more attractive, and women workers who might otherwise have entered commercial occupations were attracted to factory work, leaving a dearth of them for offices and sales positions as compared with what might have been the case had the earnings of manual workers not increased.

Another new factor in the realm of office and sales positions in particular has been the trend toward the measurement of office and sales output, with a consequent increase in output per day per worker, out of which can be paid a higher scale of earnings. As yet, however, comparatively few office workers are paid on a piece-work basis or its equivalent. A somewhat larger percentage of sales people, either in department stores or elsewhere, are paid on a commission or partially on a contingent basis.

If a high wage policy is accepted, either as a matter of sound business or of necessity, it becomes imperative that under a daily-wage or straight-salary plan attention must be given to training if the unit cost of output and of doing business is to be kept down to a point which is essential in an era of keen competition. Consequently employees, whether they work on a salary or on a contingent basis of compensation, must be trained by their supervisors in order that their output may be commensurate with the compensation they receive.

The payment of employees, especially retail sales people or other sales employees, on piece rate or on a commission or other basis of compensation contingent on results is usually attended by a comparatively high turnover, and it is well recognized that excessive turnover of employees is expensive, not only because of the cost of employing, but also because of the high cost of initial training and introduction to the job, and especially the training that is necessary during the first few months of work when a new employee is probably not fully earning his or her compensation, at least in proportion to others.

This turnover among commercial employees is more costly than formerly because of the comparatively high earnings of the present decade, and it is especially high in those occupations where earnings are contingent upon output, because an employee who cannot quickly learn to earn close to the average is very likely to become discouraged and resign.

While there are other factors in the reduction of turnover of employees such as proper selection, good working conditions, etc., nevertheless it is

recognized that one of the most important of them is adequate, well directed, and effective training.

Another phase of the situation is that a number of modern educationalists have either entered the business world as business executives or have had such close contact with the business world that it has been possible to develop methods of training more in line with modern pedagogical practice and more fitted to the training of employees in scattered groups, including workers in comparatively small offices, salesmen in the field, sales people in small stores, or manual workers in small factory units. This modern viewpoint can be summed up briefly as training on the job by the supervisor, combined with a program of training supervisors in the process of training their workers.

Origin of Training. Historically, training dates back to the earliest appearance of the master craftsman, the journeyman, and the apprentice, the apprentice usually living in the home of the master craftsman, learning the trade from him.

With the introduction of the factory system, the personal relationship between the master craftsman and beginner changed greatly. Whereas the master craftsman had formerly been owner, manager, workman, and, to some extent, tradesman, these several functions were gradually separated, and comparatively large-scale operations introduced several levels and types of responsibility and activity which gradually widened the gap between the owner and the beginning worker.

During the period of small organizations the training function became the job of the supervisor, usually referred to as a foreman or department head. To set up any formal training program would have been too expensive, and in other ways it would have been impracticable. The training of the new employee necessarily became the function of the immediate supervisor, who regarded it as a natural part of his duties. The average foreman or department head corresponded to a considerable extent to the master craftsman of the previous age.

Meanwhile, however, a differentiation unconsciously grew up between education and training. Whereas in the earlier handicraft stages education in the sense of training for general life relationships was largely a function of the master craftsman, gradually this part of education and training was absorbed by public educational authorities, especially in America, and the master craftsman was to a still greater extent than formerly relieved of that responsibility. Thus the supervisor's function was finally confined to a much greater degree to that of training for the job on the job.

Advent of Corporation Schools. With the coming of large-scale operations, training for the job became a much greater necessity, and industry and commerce began to give it substantially more intensive and formal attention. As early as the 1890's in America a few corporations had formed what were commonly called "corporation schools," the assumption being that the training function, formerly exercised by the supervisor, department head, or foreman, should be exercised by a department especially equipped and trained to perform the job of training the employees.

This change was due to the assumption that the department head or foreman could not be expected to train those employees who were responsible

to him, because he was too poorly equipped to teach, partly because it was assumed that he could not be trained to teach, and partly because it was assumed that he had too many other responsibilities, particularly those which grow out of a comparatively greater necessity for reports and for other "paper" work in a system of large-scale business.

Consequently, it was not infrequent for corporations to establish schools or educational departments, appointing as the head of that department some one who presumably was better able to train employees than the supervisor. Not infrequently a public-school teacher or official was chosen for such a position, particularly on the basis of a more complete education, and often particularly on the basis of personality. Quite often these directors knew very little about educational psychology. As a matter of fact, that science was still in comparatively primitive stages at the beginning of the corporation-school movement.

By 1913 there were in America a sufficient number of corporation schools to warrant the formation of a National Association of Corporation Schools, and this organization grew substantially in influence and numbers from 1913 to 1921. Meanwhile similar associations were formed in England, in France, in Japan, and in certain other countries.

Some of these schools adopted the pedagogical methods which had been in vogue in the public schools and in colleges during the time when the director of education had attended them. Without any particular knowledge of educational methods, he naturally adopted those with which he was most familiar, including often the formalism of the classroom and its more or less inevitable removal from occupational activity and other economic relationships.

This movement embraced a goodly proportion of companies which were interested in the training of commercial employees, that is, stenographers, typists, and dictating-machine operators, bookkeepers, clerks, retail-store sales people, and salesmen who traveled to sell to department stores or other retail companies, as well as companies interested in training manual workers, especially apprentices. There was even considerable attention given to training for export work.

Banks, insurance companies, publishing houses, department stores, security houses, and even manufacturing companies, paid attention to the training of commercial employees. They were influenced very largely by the practice of manufacturing companies in the training of apprentices and other manual workers, not recognizing that manual workers in factories are usually concentrated in large numbers in one location, whereas office employees are usually comparatively small in number, and sales people often work individually out of branch offices under comparatively intermittent supervision.

The war and the dearth of workers for offices and sales jobs emphasized the need for training, and employers grasped at every straw to solve their problems.

Unaccustomed to thinking about training problems as a part of their own jobs, the average executives naturally wished to delegate the new activity to others, believing that in this way they had absolved themselves from all

responsibility for training. Often, in addition, this motive was supported by a certain moral satisfaction over providing for the training of employees.

Business executives have no monopoly on visual-mindedness. But, if they can see desks, classrooms, blackboards, and a classroom full of students, to most of them it seems perfectly apparent that an effective job of training is being done. If to this physical evidence of training can be added graduating classes, certificates of graduation, records of attendance at classes and similar devices, they are easily persuaded that a remarkable training job is being done.

Whether output is being increased by such methods as effectively as it might be by other methods is a little difficult to grasp.

To sum up, it was only natural that in the first stages of training for employees, emphasis should be laid on those conspicuous evidences of training which superficially would seem to indicate their value.

By 1919 it had become apparent in America that many corporations were training employees without the formality of a corporation school, and this trend of thought found its expression in the renaming of the association "*National Association of Corporation Training*." These informal training programs appeared more particularly in offices and among sales forces—in other words, among commercial employees.

A few companies, particularly one large publishing house, had already developed an extensive program of training which made no use whatever of the corporation-school idea with its classes, formal instructors, examinations, etc., and this corporation had made a notable success of its training program.

Meanwhile there had come into business or into close relation with it a group of men who were leaders in the field of educational psychology and method, most of them thinking in terms of the project method of teaching.

Trend toward the Project Method of Teaching. For teaching purposes a project may be defined as a problematic act carried to completion in a natural setting. Applied to business, this means that training should be carried on under natural conditions of responsibility, supervision, and incentive, and under normal working conditions.

In recent years there has been a strong tendency for corporations to abandon the formal classroom-instruction method of training and to return to the earlier method of making training fundamentally the responsibility of the department head or supervisor.

There is, however, this very important difference that is being recognized, namely, that the supervisor should be trained in the teaching process, and that he can be trained to teach. We have abandoned the attitude that a teacher is born and not made, and we are rapidly abandoning the attitude that a supervisor, such as a foreman or office-department head, cannot be taught better methods of training.

Furthermore, we now recognize that the instructional material for training purposes, usually referred to as "instructional outlines," must be organized in such a way that the supervisor will cover all aspects of the training program so that they will not be left to mere chance or individual whim.

During this change in methods of training employees, public educational authorities were giving more and more attention to the preparation of youth

for industrial and commercial pursuits. The industrial and trade school supported as part of the public educational system became quite general.

The first tendency in this movement was to assume that the public schools could take a very large part of the program for training for business as well as education for life relationships, and for a time it was easy to find vigorous advocates of public educational institutions which would entirely relieve business of the problem of training for the job.

Business Cannot Transfer Training Problem Entirely to Public Schools.

In recent years there has been a distinct swing away from the assumption that the public schools could entirely relieve business of its own responsibility. It is now realized that the public schools have failed to perform the whole task of education and training for occupational activity, that the failure was inevitable, that the problem cannot be transferred in its entirety to the public schools, and that business, whether it wishes to or not, must assume its own share of the responsibility for training.

An increasing number of public educational leaders have accepted this principle, at first with regret, and more recently with some degree of enthusiasm.

At first, many corporation schools undertook what is generally conceded to be the responsibility of the public schools, namely, that of educating young people and even others for the broader relationships of life, most of which, of course, have some bearing on the effectiveness of an employee in his occupation. In a few cases this tendency was inspired by a successful chief executive of a company who had had few educational advantages himself and who wished his employees to have greater advantages than he had enjoyed. Paradoxically, his lack of these advantages had not conspicuously affected his own business success. For the most part this tendency has been and is being abandoned.

Organized business now expects the public schools to prepare youth for most life relationships, and by eliminating this feature from its own program, business can devote itself more intensively and effectively to training for the job.

In many quarters the terms "education" and "training" are used interchangeably; in others a distinction is made. For instance, by some education is interpreted as referring to the general training for life relationships, and training as a preparation for an occupational pursuit.

Dr. James H. Greene in his book, "Organized Training for Business," page 1, states that the term training should be restricted in its use to the organized learning-process situations where the acquisition of skill in technical processes or success in meeting definite commercial or industrial problems is the goal. To him training is a part of education, and for purposes of further discussion his definition may be accepted as fundamentally sound.

Time was when it was believed that training should be directed to the benefit of those who were comparatively new in business or in a particular activity. The emphasis on training for younger workers was particularly due to the conviction that older employees gradually lose, and ultimately lose altogether, the capacity for learning. Such a point of view also took it for granted that older workers could not be trained for new jobs or for transfer to other activities, or, for that matter, even for promotion. Another assump-

tion was also implied, namely, that older workers, especially executives, had already learned all there was to learn. Another background of these points of view was an assumption that the learning process had to do with the acquisition of knowledge of facts, and it was not clearly evident that the learning process is not complete until the learner's skill has been improved or, psychologically speaking, until there has been a change in his habits of action.

Management Largely a Training Job. Today there is a very different point of view. The president of one of our most progressive companies has frequently said that management is in large measure, eighty to ninety per cent, a training job. He illustrates by saying that on one occasion a number of executives of his company analyzed exactly what management is in terms of specific operations, and that after classifying all of the typical operations, nine out of ten of them were listed under education and training.

Along with other executives, of whom there are many, he regards the training of his immediate associates as a major part of his executive responsibilities, and assumes that the training responsibility goes on down through the organization from one supervisor to the next, and finally to the last or lowest rank of employees.

These major executives even assume that their own training is not yet complete, that business experience itself is a continual process of training, and that, furthermore, they may profitably share experiences with others in conferences and conventions, by reading, and by consultation, for the purpose of developing their own capacities in the rapidly changing business world.

It is well recognized, for instance, that the spread of large-scale business has brought with it problems of coordination and decentralization of executive responsibilities with which very few business executives are fully prepared to cope, because the methods of operating large-scale organizations require not only the necessary machinery and organization set-up, but also the grasp of a spirit and technique of development of executives without which the mere machinery of large-scale operation will be cumbersome and subject to a vast amount of friction.

If this sweeping pervasiveness of the need for training is accepted, the question, Who should do the training? becomes comparatively simple. There is only one possible answer, namely, that every supervisor must train. This conclusion must be perfectly evident simply as a matter of practical expediency. Office employees of a large corporation are frequently spread in small groups through many offices, either in the same building or even in separate buildings and even separate cities. Salesmen travel from city to city or from section to section of one city. Retail sales people for the most part must spend their time in their departments, meeting and serving their customers.

Furthermore, the great majority of employees who have suffered under the formalism of school and college have a conviction that school days are or should be over. Training for adults must as a rule, if it is to be favorably received, avoid those features which remind one of his status during youth. This principle is valid even to the extent that some companies have avoided

the use of the term training and have substituted some term such as "development," and many of them have used conferences as a means of developing employees, meetings in which there is as little as possible of the flavor of a formal classroom.

Training of Employees by Supervisors Sound Pedagogically. Pedagogically, too, the training of the employee by the supervisor is being accepted as essentially sound. The great weakness of much public-school education, especially in the past, is that the student experiences no activity by reason of which his habits of action may be changed or new ones formed. In much school work the learning process is still a passive one. We are all well aware, however, of recent developments in the educational world which have linked the learning process with activity, and, in the industrial and trade educational world, to some extent with occupational activity, at least in miniature.

In business the restrictions and handicaps with which the public educational leader is faced practically disappear. Public-school leaders in educational thought would give their eyeteeth for the educational opportunities which lie at the hand of every business executive and every supervisor.

In business the student-employee, whether old or young, a new employee or a veteran, may be trained or developed on the job under normal conditions of supervision, responsibility, and other working conditions through his own activity and under conditions in which his habit of work and thought may be changed and new habits and skills acquired by practice, and under conditions by which the results of the training may be tested through some measurement of output or other results.

This point of view has been adopted in certain outstanding companies and lines of business. In contrast to the training of life-insurance salesmen at a head-office school, a practice which was prevalent a decade ago, the most progressive life insurance companies are training their salesmen by having them actually practice selling, meeting the selling difficulties under normal conditions, and then learning from older and more experienced salesmen or from a supervisor the best methods of dealing with them. The salesman finally acquires new habits and skills which he applies with success, and to his own financial benefit as well as to that of his company. Such training must naturally be given by the supervisor in a branch office or agency.

Successful Results of Decentralized Training. In practice this policy has greatly reduced turnover or failure of salesmen, has increased the output and earnings of salesmen and the profits of the companies, and has usually resulted in a rapid expansion of the total volume of business done by the company.

In other lines of business the same practice applies in the training of office employees—stenographers, clerks, bookkeepers, etc. Banks, for instance, have pretty generally abandoned the formal classroom method of instruction and are training their new and older workers on the job under a supervisor capable of training the new employee or one who is marked for promotion.

In several electrical, telephone, and manufacturing companies, the same practice of decentralized training has been adopted, especially by large companies which formerly were wedded to centralized training by an educational department.

This trend in the training of employees in America will not be successful if not accompanied by a complementary program of training supervisors to train, which, after all, is rapidly becoming the most important part of a training program in American business.

Not all supervisors, in fact very few, are born trainers, but it is equally true that very few supervisors are incapable of becoming good trainers. In any case, it is quite true that there is no supervisor who ought to be one whose technique of training his immediate associates cannot be improved. Even those supervisors who are best equipped naturally to train employees can acquire better habits and skills in actually training them.

The central point in training employees within companies is the training of supervisors to train. One of the largest electrical companies in America has practically done away with all formal classroom instruction of employees and is concentrating its efforts on training the supervisor to train. The syllabus of the supervisors' training program consists largely, practically 90 to 95 per cent, of material which deals with teacher training, the assumption being that in order to make the training program really effective, steps must be taken to make the training of the employee continuous from the time of entering the business until he leaves it, and on the principle that the best training is that which is given in connection with actual work under normal circumstances of supervision, incentive, and responsibility.

Preparation of Instructional Material a Most Important Step in Training Program. The preparation of instructional material is, of course, one of the most important steps in a training program. At one time the usual practice was for the instructor himself to learn every element of the job and then proceed to convey the information to the employee, usually by the lecture process in classroom. More recently, emphasis is being laid on the job difficulties of the employee, and the result has been a pronounced movement in the direction of analyzing the job and the learning difficulties of the employee, and setting up the order in which the latter appear. Out of this analysis it is possible to formulate a body of instructional material which attacks, not training for the whole job, but rather training the employee to overcome the job difficulties, and to set up a learning order which will, so far as possible, solve the worker's job difficulties in natural sequence and, so far as possible, as they appear in his daily activity.

In the preparation of instructional material it is generally conceded that the supervisor who should do the training ought to have a share in preparing its outlines. In fact, he ought to have a share in preparing the whole training program. This is more or less a matter of tactics in order to enlist the whole-hearted cooperation of the supervisor by making him feel and believe that it is not simply a program superimposed on him. Furthermore, his participation in the preparation of the training program and the instructional material is a very effective part of his preparation for the training process.

In the training of supervisors to train, the same principle applies as in training the rank and file of employees. Here again practice makes perfect, but supervised practice is much more likely to bring perfection than unsupervised. The alternative is that supervisors who undertake to train are as likely to become habituated to useless or ineffective practices as they are to acquire the more skilful ones.

This point of view simply parallels the general accepted principle of training public-school teachers to teach by giving them supervised practice in schools of education or in normal schools for teachers. Its effectiveness where the plan has been used in business is well vouched for, and it is rapidly superseding all others.

An important step in a modern training program for employees which accepts the principle of decentralized training by the supervisor is an analysis of the teaching process in terms of difficulties of the supervisor or department head in training his employees on the job, for the job. Such an analysis leads to the development of a body of instructional material on the technique of training.

Actually, it has been found by some companies that it is well to present a number of successful methods of meeting such job difficulties, recognizing that different persons may need to use somewhat different methods, especially with different types of employees. This practice has the additional advantage of removing what is frequently a supervisor's alibi, namely, that he has tried a recommended practice and that it has not been successful. To such a supervisor the obvious answer is that "other methods have been suggested—try them. All of these methods have been successfully used by some supervisor. Find the one which for you will be successful, or invent a new one which for you will be effective."

There is implied in this answer the alternative that the supervisor in question may not be entitled to hold the position of supervisor.

Functions of Educational Director under a Program of Decentralized Training by Supervisors. What has happened to the educational departments or educational directors of former days? A very large number of companies still have what is commonly referred to as an educational or training department, or an educational director or manager of training activities.

There are no definite signs that the number of such departments have decreased or that they ever will decrease. The men who held such positions have in some instances been transferred to other work in or out of their companies. Other directors of training activities of former days have themselves grown and changed their points of view and aligned themselves with modern training trends.

It may well be asked, What is the function of such an educational director or manager of training activities under a program of decentralized training by the supervisor on the job for the job?

The best practice of today recognizes the following functions of such a department:

1. To provide that enthusiasm and promotive quality which spreads interest in training throughout the organization and creates desire and willingness on the part of every supervisor to take part in the training process.
2. To help to prepare the instructional outlines to be used by supervisors in the training of their workers. One says "help" advisedly, because it may be easily recognized that when the supervisors themselves have prepared the instructional outlines with the help of an educational department, they are much more likely to take an interest in the training program and to feel a definite responsibility for making it effective.

3. To prepare, improve, and constantly revise the procedure for carrying out the training program, thus facilitating the work of the supervisor.
4. To take a very active part in training the supervisor to train.
5. To act as an adviser to the management of the company in regard to the development of its personnel, and thus link the training policy of the company to the whole future of the business and its financial success.

Time was when educational and training departments were usually set apart from other personnel activities. A training department was paralleled by an employment department, an industrial relations department, a welfare department, a health department, etc. This stage of thinking about training and personnel administration in general was a period during which there was a National Association of Corporation Schools and also a National Association of Employment Managers. It assumed that one department employed people without any responsibility for training, and that another department trained employees without any responsibility for selection and without responsibility for output.

In 1922 these two associations were merged as the National Personnel Association, because it became evident that personnel administration is essentially a unit; that employment, training, placement, transfer, and promotion, and even compensation, are all different phases of the same problem. The effort to train employees who are not adapted to the work is fruitless and a waste of energy and funds.

But progress was not yet over. By 1923 it had become evident that personnel administration is an integral part of management, that every supervisor and every executive must devote himself to a very great extent to personnel problems. As Oscar Grothe, vice president of the White Sewing Machine Corporation, who is very active in the training programs of his company, says, there is in reality no personnel problem—there is only a management problem.

The consequence was that in 1923 there was a further change of name to the American Management Association, which organization devotes more attention than ever before to problems of personnel, including the training of employees. It is now quite clearly recognized that training is a management problem, not simply a management problem which may be delegated to a training department but rather one which is the responsibility of every executive from president down to the last supervisor, and which executives may solve most effectively with the help of a personnel department in which there will probably be found, on the average, a director of training activities.

If we accept the point of view that management is in large measure, 80 to 90 per cent, a training job the natural corollary is that men selected to direct training activities should possess or acquire in unusual degree not only a knowledge of the business but of instruction and training. Business executives would not place in charge of sales or production, nor be advised by, men who were novices in these affairs, who did not know sales or production technique well. It is not less important that sales or production supervisors be guided in training matters by men skilled in commercial, industrial or other vocational training. It is not wise that educational or training directors should obtain their specialized experience at the expense of the supervisory

organization. We should not continue to select "likely looking" fellows from the organization or import academically experienced teachers in whom to entrust the supervision, advice, and guidance of this 80 to 90 per cent activity.

The trend toward decentralized training by supervisors places different requirements and more responsibility upon training directors than occurred under formalized school training in business. The modern training program is infinitely closer to production, distribution or office management than heretofore. This type of training goes further than gathering statistical or descriptive data in subjective form and disseminating it informationally. Classroom activity becomes somewhat antiquated. Rather it demands analysis of general and specific situations in which training is needed. These must be studied objectively to determine the result to be gained from the training. This is an engineering job equal in status to safety, production, sales or any other phase of management engineering. It is not a school-master's nor schoolroom job.

Only one step is involved in teaching the supervisor to teach. This alone will not constitute a training program. Thirty or forty hours supervisory training does not remodel a supervisor permanently. We cannot rely on evangelistic treatment without expecting backsliders. There must be continuous training over a period of years for real effects. Supervisors who have been taught to teach cannot be expected to observe all the training possibilities in the jobs they direct. Experience shows they do not anyway. The training director ought to have a "nose" for these possibilities. A training program not built upon them will fall short.

If we accept the 80 to 90 per cent training viewpoint what of the effect upon costs through following an ill designed program? Can this training manager do less to effect costs than the production manager or the sales manager? Are we as careful in the selection and training of the training manager as in training either of the other two managers? If this man is to be responsible for gearing up the training efficiency of line and staff supervisors he must know his training theory and practice.

Supervisory training has responded to active thought in the past ten years. It has been the greatest factor in the change which has occurred in industrial training. Success would have been greater had it not been so difficult to obtain men who understood the technique of supervisory training in a practical way. There is need, urgent need, to train more of these men, directors of training, men who can promote the practical application of this activity as a management function.

From a stage when education of the worker was in large part a function of the master craftsman and training of the workman entirely so—the master craftsman, however, being ill prepared to teach except in terms of the master-ship of his craft—we have progressed through a stage of formal classroom instruction of employees, partly for educational and partly for training purposes—a period of mass production in training—to one where the educational and training work of companies is being confined largely to training for the job, on the job, by a supervisor who has been trained to train.

Employee training has thus come to be recognized as a management problem, and the stage has arrived where the subject of training employees takes a very large place in all discussion of management activities.

CHAPTER VIII

MEETING THE HAZARDS OF THE WORKER

PERSONNEL HEALTH SERVICE

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One of the more recent developments in the field of industrial relations has been the growth of health and sanitation measures for the protection of employees. Being somewhat less directly related to increased profits and such personnel activities as employment, accident prevention, and training, they have found a place in business organizations more slowly. Previous to 1910, personnel health service was practically unknown. A few firms, when installing extensive welfare programs, included medical service to employees. Others located in remote communities found it necessary to provide medical service, and frequently to take responsibility for community sanitation. Some companies engaged in hazardous operations were forced by necessity to establish medical departments to care for accident cases. A few employers, recognizing the relationship between health and operating efficiency, introduced various health measures, particularly physical examinations.

The enactment of workmen's compensation legislation in the years immediately following 1910 was the greatest single stimulus to the introduction of health and sanitation measures. These acts required employers to provide medical service to those injured while at work. Consequently, medical departments were established in many large organizations. Eventually, many of these first aid departments extended their services to include health activities.

Out of the need of business for physically competent workers and the need of employees for trustworthy medical guidance, a new attitude toward personnel health service has developed. Employers, either alone or in conjunction with workers, have introduced in hundreds of establishments medical service which they believe a necessary detail in the proper conduct of their business. They have come to recognize the relationship between healthy workers and accidents, production, and costs. Medical service has been extended to the point where it is being rendered to hundreds of thousands, even millions of workers. Health activities have developed beyond the experimental stage and have become firmly established as a necessary part of the personnel program.

Functions. The functions of the individual medical department vary to a considerable extent. The size of the organization and the type of business to a large degree determine this. Obviously, the small company cannot afford a too ambitious medical program. Companies engaged in less hazardous lines of business do not require so complete a service as those which involve operations dangerous to health and limb. Dr. W. Irving Clark of the Norton Company has summarized the scope of functions of a fully developed health department as follows:

1. The physical examination of all applicants for positions.
2. The reexamination of all employees transferred from one department to another.
3. The periodic examination of all workers employed in departments where there is a health hazard.
4. A periodic examination of all workers who have physical defects needing follow-up.
5. The placing of physically defective workers in departments where the work will not prove injurious.
6. The diagnosis and, in certain cases, the treatment of workers applying to the dispensary for medical care.
7. Cooperation where possible with the family physician of sick and defective employees.
8. Diagnosis and treatment of workers injured during employment.
9. Diagnosis and in some cases treatment of workers having surgical conditions not the result of employment.
10. Spreading health publicity by lectures, leaflets, and similar publications.

Status of the Medical Department in the Organization. Opinions differ as to the proper status of the medical or health department in the organization. Some firms prefer to assume that health service is so much a part of the personnel program that its supervision should rest with the personnel or industrial relations department. Others believe that since this activity involves professional knowledge, it should be separated from other personnel functions and assigned to a separate department of its own. A few companies have solved this problem by placing under the supervision of a doctor the entire personnel program, including medical service.

The extent and character of the health service determine which method is preferable in each individual case. If the health department is to be confined to a limited field of activities, it is very logical to assign supervision of it to the personnel department. However, where circumstances warrant particular emphasis upon personnel health service, the medical department may be recognized as a special unit apart from the personnel division. In any event, provision should be made whereby the medical department is consulted on all matters which bear directly or indirectly upon the health of the working force.

Staff. Obviously, the size of the organization and the scope of activities undertaken by the medical department determine the staff necessary to conduct personnel health service. In small units, plant nurses appointed to care for accident cases often are called upon to render health service. Contrasted with this are the elaborate medical departments maintained by many large corporations to care for the health of employees.

The simplest form of health service is that rendered by the plant dispensary nurse who finds time to attend to health cases in addition to her accident duties. Naturally, she is restricted in the scope of work which she may perform. She may not diagnose or prescribe. She may merely attend to emergency cases. Frequently, she is assigned the supervision of plant sanitation, particularly the inspection of work places, toilets, wash rooms, and recreation rooms.

In addition to dispensary nurses, some firms employ special nurses for outside visiting duty. These nurses call at the homes of ill employees and render such service as they are able to give and the employee may desire. Their particular value lies in the fact that many cases of illness may be treated by the nurse to such good advantage that the ill employee is able to return to work sooner than if no attention was given him.

The next stage in the development of a medical staff usually takes place with the appointment of a part-time or full-time physician. A variation of the former is the physician on call, that is, the physician in private practice, who is available on call for visiting industrial cases of illness. Full-time physicians are to be found in increasing numbers in large establishments. Part-time physicians and physicians on call usually are employed in the smaller organizations which have no need for the entire time of a doctor.

Often, various types of specialists are associated with industrial medical departments, either on a part-time or full-time basis. In many cases, these men are employed by firms having peculiar health hazards which require special medical service, such as those relating to chest affections, skin diseases, and throat conditions. These specialists usually are engaged in a consulting capacity and attend to those cases referred to them by the plant medical department.

Growing recognition of the importance of healthy teeth and satisfactory vision has led many organizations to provide the services of dentists and oculists. Others, such as department stores, employees of which find it necessary to be on their feet a large part of the day, provide the services of chiropodists and podiatrists.

Medical Dispensary. The location, size, and equipment of medical departments depend upon several factors, among which are the number and type of employees, the scope of health activities, and the location of the firm with respect to adequate community, hospital, and medical service.

Individual conditions determine to a large extent the most desirable location for the medical dispensary. The dispensary should be set as nearly as possible adjacent to the department that may need its services most frequently and quickly. When the activities of the medical department include physical examination of the workers and of applicants for employment, it may be advisable to have the department readily accessible to or directly connected with the employment department. If both men and women are employed, it may be preferred to provide for the separate use of equipment or to maintain separate dispensaries. If the organization is scattered over considerable space or if there are special hazards in different parts of the plant, it may be necessary to establish separate medical stations at convenient locations, these being under the direction of a trained nurse assigned by the medical department.

Although satisfactory work may sometimes be accomplished in small quarters, it is important not to handicap medical departments by assigning them inadequate space. The Conference Board of Physicians in Industry after careful consideration of the question has established the following minimum requirements for the size and equipment of an industrial dispensary:

A first-aid room should be not less than nine by twelve feet in size, should be well lighted and ventilated, should have running water—hot as well as cold, if possible—should be provided with toilet facilities in or near the first-aid room. The light should be particularly good at the point where first-aid service is to be rendered, where an adjustable electric lamp would be very serviceable and convenient. Aside from ordinary good ventilation, it is desirable to arrange for a large inflow of air by fans or otherwise, to stimulate patients when feeling faint. The ceiling and walls should be light in color and frequently cleansed.

The room should contain at least the following equipment:

One metal combination dressing table with drawers to hold instruments and dressings.

One metal chair with head and arm rest.

One metal stool built in combination with metal waste can.

One small wooden or metal examination table with pads, with ends hinged to drop down.

One stretcher, of the army type (canvas stretched over two round wood poles) or one of metal.

One small instrument sterilizer arranged for electric, gas, alcohol, or kerosene burner.

One-half dozen utensils, such as arm and foot basins, three- or four-quart ordinary basins, two-quart dipper, bed pan, etc.

One portable first-aid outfit.

Appropriate instruments, including razor, dressings, splints, drugs.

This equipment will be found generally suitable in small organizations for the treatment of minor cases. It is inadequate, however, to care for the larger number of cases usually encountered in larger establishments. Increase in facilities depends on the growth of the organization and the extension of the medical service.

The arrangement of the equipment in the industrial dispensary depends largely upon the preference of the individual in charge. In general, three types of arrangement are used. The first method employs a single large room in which all treatments are made. Patients usually are seated around the room, the physician and nurse attending each person in turn. Necessary dressings and medicines are carried from patient to patient. The second method utilizes a single room for dispensary purposes, but the equipment is localized in units for the treatment of specific types of cases. Thus, the equipment and appliances used in the different types of medical work are kept together. The third method provides a waiting room and a consultation office where injured or sick workers may be examined privately by the physician. Aside from the fact that it assures privacy, the last named type of dispensary probably is the least desirable. Most cases coming to the dispensary for treatment are suffering from minor conditions and there is little reason for privacy in rendering medical attention.

Scope of Activities. Personnel health service usually involves the following activities, emphasis being given to those which the individual firm believes most important to its particular groups of employees: physical examination, treatment of injuries, diagnosis and treatment of illness, health education, and control of working conditions and sanitation.

Physical Examination. The development of preventive medicine has brought a general recognition of the importance of the physical examination. Without knowledge of the physical condition of the individuals whose health is to be conserved or improved, it is difficult, if indeed not futile, to develop the facilities required for their care. There are two types of physical examinations: the preliminary examination of the applicant for employment and subsequent examinations at regular or irregular intervals during service with the organization. Both types of examinations are so different in purpose and method that they may be treated to a certain extent as distinct from one another.

The physical examination of applicants for employment is designed to protect the organization against the introduction of contagious diseases, against the employment of workers so handicapped by ill health or physical defects as to be a menace to themselves or to fellow workers and against false claims of injury after employment. It is further essential to the proper placing of workers in positions for which they are physically qualified. From the employee's point of view, the employment examination may furnish information which may serve as a basis for the correction of physical defects or faulty habits of life.

In order to obtain the maximum value from the physical examination, it should be conducted in a manner that not only enables management to fit a workman to a suitable job, but also reveals the information requisite providing for the maintenance of health to the end that he may continue on his job effectively.

The following list represents the Examination Standards in Reference to Physical Defects Necessitating Special Attention drawn up by the Conference Board of Physicians in Industry:

Special senses:	Eye
	Ear
Heart:	Valvular disease
	Tachycardia (Rapid heart)
	Arrhythmia (Irregular heart)
Lungs:	Tuberculosis (Consumption)
	Emphysema
	Asthma
	Bronchitis
Hernia:	Inguinal (Groin)
	Umbilical (Naval)
	Femoral (Below groin)
Limbs:	Contractures
	Enlargement
	Flat feet
	Atrophies (Wasting)
	Varicosities

Vessels:	Arteriosclerosis (Hardening of arteries) Varicose veins
Genitals:	Orchitis (Inflammation of testicle) Epididymitis (Inflammation of cord) Varicocele (Varicose veins leading to scrotum)
General:	Rheumatism, nephritis (Bright's disease) Alcoholism Syphilis Diabetes Skin, and other diseases
Spinal:	Tabes (Locomotor ataxis) Multiple sclerosis Multiple neuritis
Deformities:	Atrophies (Wasting) Hypertrophies (Enlargement) Contractures Curvatures.

All second degree defects should be considered as substandard according to the following schedule:

Hernia (2d degree or more).
Varicosities (2d degree or more).
Flat feet (2d degree or more).
Varicocele (2d degree or more).
Hearing (2d degree or more).
Vision (2d degree or more).

Also the following:

Arteriosclerosis.
Endocarditis.
Tuberculosis.
Bronchitis.

If large numbers of women are to be examined, a female physician is desirable for this purpose—even on a part-time basis. The same consideration should be given workers as would be accorded private patients in the physician's office. This is the first contact between the employee and the health-work program in industry, and every effort should be made to acquaint the worker with his condition and encourage him to consult the physician as future needs arise.

Reexaminations. As in every enterprise, there is not only the original creative work but the job of maintenance as well. This takes the form of reexaminations for the purpose of checking up existing conditions, or of discovering the development of new conditions. A desirable program of reexamination may be pursued among the following divisions of the personnel:

1. The management.
2. Substandard workers.
3. Workers exposed to industrial hazards.
4. The remaining employed group.

The management, being the most vital to the success of the concern, offers the most fertile field for constructive health work. The most important

members should be examined every six months and the entire management yearly, and the necessary preventive and reconstructive treatments instituted.

Substandard workers should be reexamined at such times as the individual needs of the case indicate. The physician making the initial examination will quickly ascertain when a reexamination will be desirable, and should establish a record system which will automatically bring this case to attention at the proper time.

Workers exposed to occupational hazards should be reexamined according to requirements of the particular situation. Much authentic literature deals in detail with various occupational diseases and will serve as a guide for the unacquainted in laying out their program.

Whenever practical, it is desirable to reexamine the remaining group yearly. If, for good reasons, this is impossible, the initial examination of applicants and reexaminations, according to the above schedule of those in the management, subnormal workers and workers exposed to industrial hazards will secure a large proportion of the benefits to be derived from physical examination. It is to be remembered that through dispensary visits on account of sickness or accident, opportunity is presented for the casual examination of a large number of workers.

Some Common Questions. What is the best way to start the physical examination program? There may be several best ways, but certainly one point is fundamental. That is, the manager of the enterprise must be "sold" on the merits of this work. This places squarely on his shoulders the responsibility of leadership and example. He and his management organization must willingly and gladly submit to examination, and cooperate in influencing others to follow this example. If the management is not convinced of the wisdom of this work it would better be left undone, for workers will quickly sense the insincerity of something offered to them but not good enough for their superiors. Granted an agreement among the management of the desirability of beginning physical examinations, they should be the first to submit to the examination and follow the advice furnished. Next, older employees from the different departments may be selected, and then applicants for work, and finally the entire remaining force. Under certain conditions it has been found satisfactory to begin the examination work with applicants and gradually extend it to the employed force.

Frequently, there is seen in the management a lukewarm belief in the desirability of physical examination, but a fear that some untoward happening will result if it is actually attempted. Most of us have passed through this state and have later been surprised and chagrined to see how little real difficulty developed. Given the right management attitude and example and an industrial physician with good common sense and ability, nothing but useful and satisfactory results will follow.

What about those who are rejected or found suitable for only limited employment? This is a less serious problem than might seem at first thought. Over a period of years in many plants, the rejection rate has been slightly over 5 per cent. It is ordinarily simple for the examining physician to show a man why he is incapable of doing available work in the plant. Sometimes, the cooperation of the family or a consulting physician is desirable. Then,

too, prior to employment, we are no more obligated to employ a physically unfit man to do manual labor than we are to employ a man unable to do simple arithmetical calculations for accounting. This is one advantage of making examinations before or during the process of hiring.

Great insight and knowledge, both medical and of plant operation, is required to intelligently place those who have definite physical defects in work which will enable them to safely earn a livelihood and give to the enterprise a profitable return. This is one of the greatest constructive services resulting from physical examination and requires, as has been stated, an intimate knowledge of plant operations and the cooperation of the Employment Department.

What does physical examination work cost? This will differ considerably under varying conditions. If the volume of work is sufficient to occupy a full-time physician, the cost will be nominal—probably less than \$1 per examination. On a part-time basis in a smaller factory the cost can be made very low. In fact, under almost any conditions some plan can be worked out, if the service is really desired, on such a basis that the cost will not be prohibitive.

Treatment of Injuries. The major activity of medical departments, particularly in the case of industrial firms, is the treatment of injuries arising as the result of accidents occurring in the course of employment. Broadly speaking, injuries of this type may be classified into three groups—trivial, moderately severe, and severe. The method of treatment differs in each. Trivial injuries, by far the largest number, usually can be treated by the dispensary nurse under the supervision of one of the medical staff. In the case of more common injuries, it has been found more convenient to develop a standardized treatment and to have on hand standardized equipment and medicine ready for the care of all such cases.

Dr. Clark suggests the following standardized treatment:

Lacerated, incised, and abraded wounds.

1. Cleanse part freely with gasoline, using sterile gauze.
2. Wipe out wound thoroughly with cotton applicator dipped in gasoline.
3. Paint wound thoroughly with iodine, using a cotton swab applicator, or spray iodine into and around wound.
4. Apply sterile gauze compress.
5. Bandage.
6. Reinforce bandage with adhesive plaster strips.

Sprains.

1. Shave.
2. Bandage.
3. Transport to doctor.

Burns.

1. Cleanse gently with saturated solution of soda bicarbonate.
2. Apply 3 per cent soda bicarbonate ointment or in mild cases powder with compound stearate of zinc.

3. Apply dry sterile dressing held in place by a not too snug bandage.

Strains (back).

1. Strap using straps three inches wide.
2. Bake with electric heater.

Fractures.

1. Put injured part at rest by immediate immobilization in appropriate splint.

2. Summon doctor.

Haemorrhage.

1. Paint rapidly with iodine.

2. Apply mass of three- by three-inch sterile gauze compress held snug with bandage.

3. Splint.

4. Apply tourniquet only if absolutely necessary.

5. Summon doctor.

Eye injuries.

1. Flood eye with 4 per cent boric acid solution.

2. Wipe out loose particles with sterile cotton swab on applicator.

3. In case injury is severe or if foreign body is imbedded in cornea, drop castor oil freely into eye, apply sterile gauze, bandage loosely, and send to physician.

While trivial injuries can be safely treated by a specially trained nurse, all cases of moderately severe injuries should be seen by a doctor at once. The efficiency of the first treatment and accuracy of diagnosis plays a most important part in the rapidity of recovery.

Severe accidents require the immediate attention of a doctor. First aid should be given the patient at the point where the accident occurs, but this should be of the simplest type. Transportation to the dispensary should take place under a doctor's direct supervision. Further treatment of the case, whether at the dispensary or at the hospital should be at the direct supervision of the head of the medical department.

Diagnosis and Treatment of Illness. The gradual extension of compensation acts to include illness arising from occupational hazards and wider recognition of the direct relationship between health of employees and efficient operation have been responsible for the introduction of health service in many companies which have a medical department. However, opinions differ as to the extent to which health service should be provided. In the past, private practitioners have questioned the right of the employer to provide medical attention to employees who have become ill in the course of employment. In recent years, this objection has diminished. There is evidence that the supposed encroachment of industrial medical activities upon the private practice of outside physicians is more apparent than real.

A primary object of the medical department should be to prevent as much sickness as possible. Therefore, it should also treat minor cases of illness which would not otherwise receive medical attention and should give emergency treatment and advice in cases of sudden illness. In addition, it should cooperate with the family physician carrying out any suggestions made by him as regards change of work or other matters which are under its control. In providing this service, employers should be careful to assume no special obligation to care for employees beyond the provision of reasonably sanitary and healthful working conditions and treatment of illness arising from employment.

The scope of this service will generally have to be determined by the type of medical and hospital service available in the community. In the case

of firms located in small towns, the company dispensary may easily become a medical center at which X-ray and laboratory work can be done at a trifling charge for the doctors in the community. Employers in large cities have no need to provide such complete service. Their medical departments should be confined entirely to the treatment of trivial sickness in an effort to prevent the development of more serious illness, cases of the latter being referred to private physicians.

Health Education. An important influence upon the health of the individual employee is the care which he himself devotes to the safeguarding and maintenance of his health. Repeated contact with the medical department acquaints him with simple methods of preventing and relieving illness. Usually this is the initial form in which health education begins. Health education campaigns beyond this take numerous forms. The more common programs include the following: group conferences, posters, bulletins, articles in employees' magazines, motion and stereopticon pictures, classroom instruction, and demonstrations. No matter what combination of these is introduced, it must be borne in mind constantly that the most effective health education is that which arises out of the contact established every time an employee visits the medical department for treatment.

Control of Working Conditions and Sanitation. To be complete, the program for health conservation must include close supervision over working conditions. While remedial action usually rests with management, responsibility for providing healthy working conditions should be assigned to the medical department. This should include such items as illumination and ventilation. In addition, the medical department should be responsible for control of special industrial hazards such as dust, heat, humidity, and poisons.

Cleanliness of workrooms, washrooms and toilets, lockers, and the plant generally is largely a matter to be attended to by the workers engaged for that purpose. The general supervision of this work, however, may properly be at least under the advisory control of the medical department.

Diseases resulting from physical working conditions or the use of chemicals incidental to manufacturing are coming to occupy an important place in industry. These cases, in themselves, in some plants demand much technical knowledge, as well as having an effect on the program of physical examination, remedial treatment, and compensation insurance.

A careful study on the part of the industrial physician of any processes capable of causing occupational diseases is required. He must know the causative agents, methods of preventing or minimizing the hazards and the proper treatment and relation of such cases to compensation insurance. For detailed information on this subject one may be referred to Kober and Hayhurts, "Industrial Health."¹

Medical Records. The personal preference of the head of the medical department usually determines what medical records shall be maintained. Consequently, wide variation in forms may be found in industry. In general, however, the following records are kept:

1. Daily log of medical treatments.
2. Individual record of medical treatments.

¹ P. Blakiston's Sons & Co.

3. Report of physical examination.
4. Monthly report of medical department.

In most cases, the first two are comparatively simple records. As employees are treated by the medical department, record is made upon a daily log. Data entered includes notation of the employee's name and check number and a brief description of the diagnosis and treatment. At the close of each day, this information is posted to individual records of medical treatments. The American Association of Industrial Physicians and Surgeons recommends two forms, either of which may be used for this purpose. These forms are shown in Figs. 1 and 2.

Industrial physicians differ as to the preferable form for recording data secured as the result of the physical examination. One group prefers a record

NAME DEPARTMENT		ADDRESS CHECK NO		NAME OF COMPANY ADDRESS OF COMPANY	
AGE	SEX	M W S D	OCCUPATION DEFECT		
DATE OF DISPENSARY VISITS	DIAGNOSIS		TREATMENT		CALENDAR DAYS LOST
(BODY OF CARD FRONT & BACK TO BE RULED TO FACILITATE ENTRY OF RECORD)					

NAME DEPARTMENT		ADDRESS CHECK NO		NAME OF COMPANY ADDRESS OF COMPANY	
PREVIOUS OCCUPATIONS WITH DATES		OCCUPATION			
YEAR OF BIRTH	SEX	M W S D	NATIONALITY		
DATE EMPLOYED	DAYS LEFT DEFECT				
PHYS EXAM. CLASS					
DATE OF DISPENSARY VISITS	DIAGNOSIS		TREATMENT		CALENDAR DAYS LOST
(BODY OF CARD FRONT & BACK TO BE RULED TO FACILITATE ENTRY OF RECORD)					

FIGS. 1 and 2.

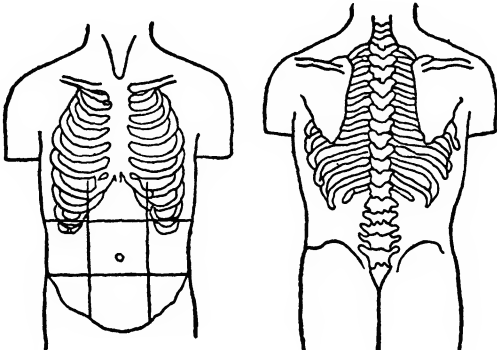
similar to that in use at the Norton Company (Fig. 3) since this gives the examining physician an opportunity to record in detail all facts concerning specific conditions. In contrast, another group favors a form such as that used by The National Malleable Castings Company (Fig. 4). This record makes use of the check list and diagrammatic methods for indicating conditions and thereby simplifies the recording and summarizing of results. Both types of report have merit. The choice as to which shall be adopted rests with the individual organization.

In order to present a monthly summary of the activities of the medical department, a record similar to that compiled by the Medical Department of the Eastman Kodak Company (Fig. 5) may be used.

Health & Sanitation Department, Norton Company, Worcester, Mass.			
Name		Age	
Address			
Dept.	No.	Date	
Gen. appearance			
Eyes:	Vision dist. 10ft.	{ R L	
Ears:	Hears watch	{ R L	Inches Inches
Nose			
Throat			
Tongue			
Teeth			
Neck			
Chest contour			
Heart			
Lungs			
Abdomen			
Extrem.	{ Upper Lower		
Ing. reg.			
G.U.			
Spine			
Skin			

FIG. 3.

In considering the matter of medical records, it is important to keep in mind the fact that this data should be regarded as confidential. The records should not be open to the inspection of any one other than members of the medical



Pulse	B.P.
Urinalysis	
Color	Alb.
Ppt.	Sugar
Sp.Gr.	Microscop
React	
Summary	

FIG. 3 (Reverse).

department. The knowledge that these records are kept confidential will help greatly in securing the cooperation and goodwill of the working force.

Medical Sociology. Already several new relationships, both within and outside the plant, have been suggested. It is perhaps desirable to enumerate

more definitely some of these activities which may be developed into opportunities for furtherance of the health program.

The first of these grows within the plant through such media as the Mutual Benefit Association, athletic organizations, foremen's meetings, and shop committees.

FORM 273		REPORT OF PHYSICAL EXAMINATION										DATE _____		
		THE NATIONAL MALLEABLE CASTINGS CO. TOLEDO, OHIO												
CHECK NO.	NAME	AGE _____												
FINDINGS		A	B	C	1	2	3	4	5	6	7	8	9	10
DATE OF EXAMINATION														
CLASSIFICATIONS		R	L	R	L	R	L	R	L	R	L	R	L	R
EYES		INGUINAL REGION												
11 Defective vision														
12 Old injury														
13 Conjunctivitis														
14 Trachoma														
15 Interstitial keratitis														
EARS		GENITO-URINARY												
17 Wax in ears														
18 Otitis media														
19 Deafness from														
20 other causes														
NOSE		EXTREMITIES												
21 Old fracture														
22 Old fracture														
THROAT AND MOUTH		ARTERIES												
23 Pharyngitis														
24 Enlarged tonsils														
25 New growth														
26 Syphilis														
TEETH		BLOOD PRESSURE												
27 Defective teeth														
28 Malocclusion														
TONGUE		SKIN												
29 New growth														
30 Syphilis														
NECK		GENERAL												
31 Goitre														
32 New growth														
LUNGS		URINALYSIS												
33 Pulmonary T. R.														
34 Pleurisy														
35 Acute bronchitis														
36 Chronic bronchitis														
37 Emphysema														
HEART		GENERAL												
38 Valvular disease														
39 Hypertrophy														
ABDOMEN		GENERAL												
40 Enlarged liver														
41 Enlarged spleen														
42 Chronic pyelitis														
43 Vaginitis														
44 New growth														
45 Kidney stones														

NOTE - MARK ✓ TO INDICATE DEFECTS THAT DO NOT REQUIRE MEDICAL MEASURES, X THAT REQUIRE MEDICAL MEASURES BUT DO NOT DISQUALIFY, + THAT DISQUALIFY DESCRIBE X AND + ON OTHER SIDE, USING REFERENCE NUMBERS AND DIAGRAMS WHERE NECESSARY.

FIG. 4.

If the physician in industry is really awake to his opportunities he will identify himself with such activities and will use them as a means of instruction in health and hygiene and for developing interest and cooperation in

this field. The Mutual Benefit Association is a particularly fertile field for such constructive work.

Outside the plant, the most common and useful method of creating helpful service and influence is through home visits, usually on occasions of absence from work. Many companies have found it profitable to investigate absences and follow up cases of disability caused by sickness and accidents. Some few companies have seen fit to attempt the medical treatment of employees and their families in their homes to a very inclusive extent. Such a step is rather advanced and while under certain local conditions it might be wise,

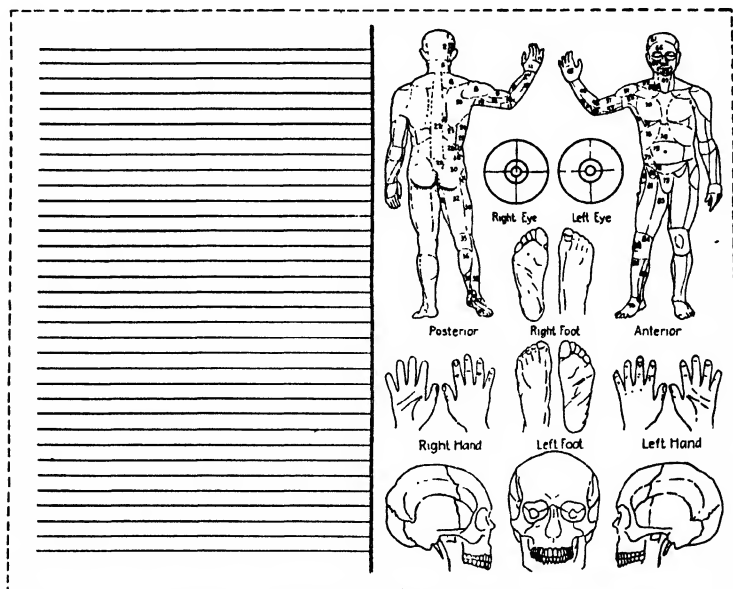


FIG. 4 (Reverse).

generally speaking, industrial medicine has not yet attained a point of development where such practice would be advisable.

Considerable reduction in general absence and much constructive assistance in shortening disability has been frequently accomplished by the home investigation of absences by nurses, supplemented in some cases, by the industrial physician. These visits may be made on the second or third day of absence and revisits to those disabled as may be indicated. These visits should never savor of "policing" but should be made into opportunities for constructive health work and a reasonable audit of personal absences. If properly done, they will not be resented but, on the whole, welcomed.

The physician in industry may, with much advantage to himself, his company and the employees, identify himself with civic and professional

MONTHLY REPORT				
Medical Department, Eastman Kodak Company				
Plant _____		Month _____ 192__		
		MALE	FEMALE	TOTAL
APPLICANTS	Examinations			
	Rejections			
	Percentage rejected			
	Re-examinations			
	Vaccinations			
	TOTAL			
PRESENT EMPLOYEES	Examinations			
	Follow-up			
	TOTAL			
EYES	Examinations			
	Re-examinations			
	Glasses furnished			
	TOTAL			
NUTRITION	Consultations			
	Letters			
	TOTAL			
DENTAL	Extractions			
	Cleanings			
	Radiographs			
	TOTAL			
SURGICAL	Cases occurring in plant			
	Secondary dressings			
	Accidents outside of plant			
	Secondary dressings			
	Radiographs			
	TOTAL			
SICKNESS	First treatment			
	Secondary treatments			
	House calls			
	Employees taken home			
	Taken to hospital			
	Radiographs			
	Examined after absence			
TOTAL				
ACCIDENTS	Reportable cases			
	Secondary dressings			
	Minor injuries			
	Secondary dressings			
	House calls			
	Employees taken home			
	Taken to hospital			
	Radiographs			
	TOTAL			
TOTAL				

M. D

FIG. 5.

organizations in the community. The local medical society, the Red Cross, the antituberculosis association, the district nursing association, and the

local public health work are all fields allied with his, and his associations with such endeavors may well prove useful.

As has been mentioned, the relationship of the industrial physician with the practicing physician is extremely important. With proper care and effort, desirable working arrangements can be created and maintained. It has been found helpful, in order to acquaint practicing physicians with factory conditions of work and with the aspirations of the industrial physician, to invite groups to the plant, showing them the work being carried on and outlining the policy governing the work. Their attitude with employees and toward the medical work in the plant is sometimes materially changed as a result of such visits. This problem of the industrial physician requires much patience and constructive effort but results will make it well worth while.

The enumeration of these various correlaries to the practice of industrial medicine suggests that the opportunities for useful influence by the industrial physician are manifold and make for accomplishments beyond the original conceptions of the field of industrial medicine.

Costs of Health Service. What will be the cost of such a program of health supervision as has been outlined? An investigation made by a committee from the Associated Industries of Massachusetts among 90 leading manufacturing plants indicates that these plants are spending three-tenths of 1 per cent of the factory pay roll for health supervision.

An investigation made by the National Industrial Conference Board, indicated that in 207 plants, employing 764,247 workers, the average annual per capita cost of health supervision was \$4.43.

Obviously these cost figures are of general interest only, but they do point out that the cost of such service is very nominal and considering the potentialities for saving and service may well be a paying investment to an industrial enterprise.

Measure of Accomplishments. Too often in personnel activities no definite effort is made to measure accomplishments. Sometimes, too, we lack a yardstick. This is not true in industrial medicine. Simple records and small clerical effort will tell us the results. These are best interpreted as days lost yearly on account of sickness and accident. In some cases, efforts have been made and results secured in determining in much detail, reasons for sickness, incidence according to age, occupation, sex, and physical condition. There is a rapidly growing attempt to collect such information and to create it in such terms as to be comparable with the experiences in other plants. Such a scientific effort toward the measurement of accomplishments in industrial medicine hardly needs commendation. Useful information and assistance in this field may be secured from the Statistical Office of the United States Public Health Service.¹

Results. Business executives will rightly question what results may be expected from such a program as has been outlined. Detailed experiences would be inappropriate, but certain general statements based on broad experiences will be helpful. In a business with a reasonably representative personnel as regards age and sex, with no outstanding occupational hazards, total

¹ Treasury Department, Washington, D. C.

absence rates should be controlled at around 4 per cent of working time. This can be bettered in many incidences. Sickness disability should not exceed 2 per cent of work time. Accident disability will assume a rate dependent on the degree of hazard, the effectiveness of the safety program, the cooperation of the organization, the promptness of surgical care, and the intelligence and energy of administration by those responsible for this function. Suffice to say that the medical department can through early and proper treatment and continued follow-up of accident cases throughout disability, play an extremely important economic role in the control of accident costs. By the same token much reduction in cost of mutual benefit association, group insurance, and pension costs, may be effected. Through minimizing losses incident to absence for personal reasons, sickness and accident, a well-organized medical department can and does make a considerable economic contribution to the enterprise.

VACATION PRINCIPLES AND PRACTICES: AN APPRAISAL OF POLICY

BY DANIEL BLOOMFIELD, *Managing Director, Boston Retail Trade Board*

Like many other phases of management practice, the matter of vacations for executives, office employees and factory workers has received little intensive study. The few studies already made indicate that the vacation policies of most of our business organizations have grown up in a more or less haphazard way and are largely based on expediency rather than on a carefully worked out philosophy of management. The general feeling has been that vacations are a good thing but the explanation for that feeling varies. Some believe that vacations are justified from the standpoint of health and efficiency but believe that such vacations should be limited to the supervisory staff and office workers. Others see no justification for drawing the line and excluding routine and factory workers. Then again some see in vacations a condition in the employment relation required by custom or competition which must be met regardless of experience or other reasons for or against this practice. We can touch here only on some of the fundamentals which seem to surround vacation practice particularly with reference to executives and the supervisory staff, and briefly on vacation policy as it affects office routine workers and factory employees.

Underlying Reasons for Vacations. Undoubtedly the vacation practice began with proprietors of industry who felt the need of dropping their business responsibilities for a period sufficient to enable them to recuperate health, strength, or vigor, or for some other reason. Gradually as industrial units increased in size, this custom was extended to those associates who bore a major portion of the responsibility of the particular business and its operation. From this point it seems that the custom of allowing vacations with pay has grown through internal comparisons between jobs and competition between concerns until the present, when it is the common practice to provide paid vacations to all grades of executives and most office workers. In recent years

some concerns have extended the practice to factory employees with various qualifications.

Another version of the history of vacations is that vacations with pay in the beginning were granted during the quiet business seasons to men who were engaged in managerial or clerical work. This practice probably resulted from the fact that such men during the busy periods were required to work a great deal of overtime for which they received no extra compensation and probably tired themselves out considerably in doing this. Moreover, while they were away on their vacations the concern was put to no extra expense, for their work was usually allowed to pile up for their return.

As office forces became larger, clerical workers still received vacations with pay, and the above principles held for a considerable time. Overtime for clerical workers was not paid for, and on the whole their pay was lower than that of factory workers, so that some added incentive must be given to keep them interested. The paid vacation was the least expensive way of handling the situation since it meant that even with larger clerical forces the group as a whole carried on the work of individuals who happened to be absent on vacations and thus the concern was put to no particular expense.

The executive who puts this view forward feels that we are now facing a somewhat different situation: He continues,

The large clerical forces today are so organized that the work is as specialized on many of the jobs as those of production workers in the plant. Absenteeism among such groups means that extra people must be kept in reserve to handle the work for it cannot be allowed to hold over until the employees return, nor can the group absorb the other person's burden. It is difficult to see the justification of paid vacations for such groups of clerical workers unless such vacations are made a part of the wage contract and it is thoroughly understood that the wage is smaller because vacation money is being saved out of it.

From the strictly practical viewpoint, this executive feels that vacations are given because it is necessary to do so to attract and keep the best type of workers. Speaking of his firm he says:

This company for a number of years experimented with the plan of granting no vacation with pay to clerical workers. All clerks below the supervisory grade were hired on the hourly basis of pay, which meant that they would be paid time-and-a-half for any overtime and would not be paid for out time for vacation, holidays or illness. The wage scale was increased to compensate for the paid vacation and holidays, and the employee was expected to save from his earnings enough to cover his expenses during this period. Logically the plan seemed to be right and theoretically it should work. As a matter of fact, however, this was not the case. The clerical worker whether experienced or inexperienced seems to feel that the paid vacation is a sign of distinction and puts her in a little higher social class than the factory worker who does not receive such a vacation. The payment of money does not compensate her for this loss in caste which she suffers when she does not receive pay for vacation and holidays. Although our wage scale was higher than the average we were unable to secure the services of a large number of good prospects simply because of our policy relative to vacations. We therefore changed our policy.

We analyzed our clerical jobs and as a result of this analysis we divided them into two classes: those jobs which are so routine as to approximate factory production work remained in the hourly payment class; those jobs which require training and experience and which on the whole are such that when a person is absent the work must be either cut up by the group or left for the employee to do on his return, were paid on the salary basis of pay. By this method we got away from our difficulty of not being able to secure the best trained clerical workers, and also we hoped to stir up the ambition of the routine workers to get promoted to a job which would entitle them to vacation.

Vacations as an Aid to Health and Efficiency of Executives. While the view seems to be held by many that vacations are offered because competition for the services of clerical workers and others requires them, one cannot escape the fact that vacations are an aid to health and efficiency and this is one of the principal reasons for the vacation practice.

Let us consider the question with reference to executives and others in a supervisory capacity. Psychologists have discovered various kinds of fatigue which is not muscular but is caused by nervous strain. This is more prevalent among executives today than ever before. Judgment depends on mental and physical efficiency. These tend to become impaired by the stress and strain of modern living conditions and modern business. The greater the responsibility the greater the strain and mental fatigue.

The emotional factors in the job of an executive have not been given the full study they demand. Worry, fear of failure, anxiety as to results, pressure of duties and responsibilities, added to the fatigue brought on by physical conditions, create emotional conditions which affect an executive's work.

The antidote for this poisonous condition is a vacation properly utilized. This requires an entire change of occupation and scene, relaxation and physical activity which recreates but does not sap vitality. The element of play in vacation is essential. It is the *attitude* that counts. Physiologically, play and work are similar. It is one's state of mind that makes a vacation.

Vacations for executives should be considered in relation to the whole year rather than to the summer only. Some men need more than a summer vacation. Some again are better off in taking a vacation at a time other than the summer.

This is how one large manufacturing concern is handling the matter:

For the past ten years this company has maintained the services of a physician to watch over the health of the men in its higher executive group; this group includes, outside of the Board of Directors, such men as sales managers, merchandise managers, superintendents of manufacturing divisions and the higher executives in the office.

A study of the medical history of these men for a few years previous showed that a large percentage of them had been absent for varying periods during each year on account of illness. A careful physical examination of each of them showed that many of them were not in the condition to resist illness well. The physician felt that an increase of the regular vacation period from two weeks to three weeks plus a reduction in the number of working hours based on the individual's physical condition would mean, in the long run, that the company would get more continuous service, and service of a better

grade, from the group. The directors agreed with the principle that an executive in ill health is perhaps worse than no executive at all and decided that they would try the experiment of giving longer vacations and allowing the physician to have full rein in determining the hours which a man should work.

When the plan was put into effect there was some talk particularly by the men whose positions were just below the group selected, but that has since entirely died away. A study of the absentee records of the men in question shows a remarkable change for the better, so much so that even considering the longer vacation and shorter hours worked by many of them, the total time per year worked by the group is far in excess than was the case with the short vacation and longer hours. In addition to this, of course, must be considered the fact that since these men were in better health they were naturally more able to carry on their work effectively.

The physician who has been carrying on this work states that he found that two weeks' vacation in the case of all the executives, except those who were phlegmatic, was only enough to tone them up, but was not enough to allow them to really build up a reserve upon which they could call for the next year. He has, therefore, insisted upon the three weeks' being continuous rather than being broken up except in the cases of those men who are of such a type that short stretches at short intervals did more to restore their strength than the longer vacation. The physician is not limited to prescribe three weeks as the vacation period. In the case of men who are in run-down condition he may prescribe four weeks on occasion although this has happened infrequently.

At the end of this ten years' experiment the company is convinced that pacing the vacation policy for executives in the hands of a competent physician is a far more efficient method of handling the situation than simply one of following a hide-bound custom and establishing a policy without medical advice.

Generally speaking, the greater the responsibility the more necessary is a vacation. This is generally conceded by business. The question is how far down the line should we go. It is here that we must get at facts and experience to guide us.

Do Vacations Stimulate Better Attendance? The above question, when put to over 100 executives, brought replies which showed that in many large concerns vacation plans are not considered to have a direct bearing on the regularity of attendance. In fact, this is considered a separate problem. Some firms, however, use the vacation plan as a sort of reward for steady attendance. One large insurance company, for example, adds four days to the employee's annual vacation when the record of attendance is perfect. In some concerns, personal time (this does not include illness or excusable absences) taken during the year is deducted from the vacation period. The company claims that this stimulates better attendance records.

Here again the argument is made that vacations help to maintain the worker in a healthy condition and that the change from steady occupation offered by vacations tends to improve the attendance record.

Vacations during Shutdowns or Slack Seasons. In a number of companies vacations are given because of the necessity for a shutdown for repairs or inventory or because of slack season. One plant closes down for two weeks in August and operates with a skeleton organization. All vacations are

taken during this period. A large hosiery mill closes its plant for one week in July each year and gives its plant employees a vacation. The office and shipping room are kept open and the employees in these sections of the plant are assigned vacations on a staggered schedule. In some department stores vacations are given during January and February in addition to the summer vacations. A large manufacturer of sewing machines gives its field sales force vacations with full pay during the months from June to September.

Length of Vacation Period. Briefly summed up, the justification for differences in length of vacations of executives, office workers and factory workers is the fact that:

Executives often work longer hours than their subordinates, often giving time outside the office: the measure of their responsibility and the necessity for conserving their energy makes necessary a break in their work for rest or change.

Office workers frequently work over their regular time for no compensation—have varying grades of responsibility, generally of minor character.

Factory workers usually have definitely fixed hours of employment, and are paid (sometimes double pay) for any overtime; work is routine and carries limited responsibility.

Executives in most cases receive vacations of from two to four weeks according to the responsibilities they carry. How far habit and custom are responsible for the length of vacation period for executives rather than considerations of health and efficiency does not appear in a study of many plans. Practice varies a good deal.

One large insurance company allows its chief executive four weeks, its junior executives three weeks and the remainder of the staff two weeks. In a large manufacturing concern in the East the vacations of executives, supervisors and department heads are worked on a flexible basis and are taken when each head feels that he can best be spared. In some cases a vacation of two weeks is taken and in other cases two vacations of one week each. Department heads may take three or four days two or three times a year when most convenient, though the company does not believe that this is as satisfactory from the standpoint of rest and recuperation as are longer vacations taken at one time.

A large chain of lunch rooms has another motive for giving vacations to its executives. They want to force the executive to arrange his work so that he can leave his duties for a period of at least two weeks at a time in the hands of others. "This assures us," they say, "that in case of an emergency arising such as absence due to sickness, etc., we know that someone is sufficiently in touch with the absentee's duties to enable him to 'carry on' until the absentee returns, or other provisions are made."

In another case, a large correspondence school, a plan is in effect regarding employees who make a trip to Europe. All employees who can make a trip of this kind are allowed five weeks' pay. In addition all employees who have a perfect attendance for a month are allowed an "honor half-day" the following month. A manufacturer of drugs treats its office and factory employees alike. The length of vacation is based on length of service, the general rule being approximately as follows:

Years of Service	Vacation, Weeks
1	1
2 to 20	2
Over 20	3

In the case of executives, if they need more than two weeks "to rest up" this time is granted them.

A public utility concern makes no distinction between office and plant men as to length of vacation nor between executive and routine workers. Occasionally where executives have completed periods of unusual working pressure, short additional vacations are arranged for informally.

Should Vacation Money Be Advanced? The replies to this question received by the committee which made the 1926 study were practically unanimous against holding out vacation pay for a period to insure continuance of service. The soundness of withholding pay checks in order to insure the employees' return after vacation is questionable. Theoretically, wages or salary should be paid at the end of vacations. But in practice this does not seem to work out. The majority of employees require the money for vacation purposes. If an employee does not have sufficient loyalty to return after having received a vacation, his services would better be discontinued. As one company puts it, "We believe that service which has been rendered justifies the vacation. There can, therefore, be no excuse for withholding vacation pay."

Some concerns, however, leave this question to be settled by the employee. If he requests his pay it is given to him. In other cases the regular pay period is maintained whether this is at the end of the vacation or not.

Should Vacations Be Used as Attendance Bonuses? There is considerable doubt as to whether a vacation plan will correct poor attendance, though it may help a little. An employee may have a poor attendance record due to illness. His worth to the company may warrant continuance on the payroll and if so, a vacation is in such instances needed fully as much, if not more than where the attendance has been good on account of good health. The matter of attendance is a separate problem to be settled irrespective of the question of vacations. The use of vacations as an attendance bonus makes the reward too distant from the performance on which it is based. Attendance bonuses should be calculated and paid weekly or monthly.

Should Employees Take Other Employment during Vacations? There seems to be universal agreement that employees should be discouraged from taking temporary work during vacation time. The problem is how to do this. Various letters received by the committee were to the effect that articles and suggestions of how a vacation should be spent should be run in the house organ of the company in an effort to educate employees so that they will get the greatest value from their vacations. Here is where the employment department and the management can well take a hand in establishing the right attitude toward vacations.

On the other hand, discouraging employees from securing work during vacations seems unwise to some employers. They say that the employee's time is his own and it should be free from company control.

The facts gathered do not point to any serious problem in this direction, for very few employees use vacation time for other employment. Should a

clerical worker, for example, find means of earning additional money through manual labor such as farming or other outside work the question is whether he would not return to his regular work more fully fit than if he had spent his time on a hotel porch or had kept late hours at dances.

Another question in this connection is whether employees should be allowed to continue their regular duties during their vacation period and receive double pay. This is a practice that is universally condemned. Of course, extreme emergencies may require such work, but the better plan is to arrange for a vacation period at a later time and perhaps offer some additional reward. In any case, every effort should be made to give sufficient notice of such change in vacation period before the employee has made his arrangements.

Are Saturday Whole Holidays a Substitute for Vacations? The attitude of executives on this question is decidedly a negative one. Saturday holidays are not a satisfactory substitute for regular vacations. The week-end period is too short for complete relaxation, helpful though it may be in easing up the strain of the previous week. One firm closes its plant on Saturdays throughout the year but does not believe that this is a satisfactory substitute for vacations.

Shall Vacations Be Confined to Summer? The general opinion on this question is in the affirmative. A more satisfactory vacation can be found by the average employee at less expense in summer than in any other season. A large insurance company confines its vacation periods to the summer for the following reasons: (1) temporary employees can then be obtained most readily from undergraduates in high school and college, (2) the requirements of this company's business are such that their trained employees can best be released during the summer period. Nevertheless there are concerns which give winter vacations in addition to the others. Several Boston department stores have established this practice for executives and other workers based on length of service.

Vacations should not be allowed to accumulate from year to year. This would result in confusion and would defeat the main purpose of the vacation period.

Control of Vacations. Should increased vacation time be allowed as a bonus for taking the vacation in the slack period of a seasonal industry or of a department with variable activity? Under suitable control this may be desirable in exceptional cases. This question does not involve the fundamental principles of vacations but applies to the peculiar conditions of an industry or a business.

It will be of interest to quote the plan used by a fire insurance company:

If the seasonal peak occurs at any other time except during the summer months, the usual vacation season helps to solve the peak problem, because there is no objection to asking the employees to take their vacations during the summer months when business is slack. If the peak occurs during the summer months, as it does in our case, the vacation problem is a difficult one. The company has not felt that it could refuse to give employees vacations during the summer months, but it has taken steps to induce employees of those departments where the summer business causes a considerable peak,

to take their vacations at some other time of the year. A short time ago it was announced to the employees in certain departments where there is a decided summer peak that if vacations were taken from Nov. 1 to Apr. 1, a three-weeks' vacation would be given instead of the usual two weeks' vacation, and if vacations were taken during October and April two and one-half weeks' vacation would be given. A number of employees have taken advantage of this opportunity to obtain longer vacations. For every employee who did transfer his vacation from the summer to the fall or winter, a saving was made in that it was not necessary to obtain a temporary employee to take his place. The company could therefore very well afford to give the additional vacation during the winter when the department was not working at the highest degree of efficiency.

The departments also arrange the vacation schedule so that as many vacations as possible are taken in May or September, when the work is not so heavy as it is in the three summer months.

This control of vacations has been of considerable assistance to us in meeting the peak load problem in certain departments.

Vacations and Holidays. When legal holidays come during vacation periods should vacations be extended so many additional days? The general practice is not to extend vacations in such cases but where holidays fall immediately prior to or after the vacation period assigned, such holidays will naturally be included.

Conclusion. The practice of granting vacations to executives and office employees is well established. The reasons for vacations seem to be based on the desire of employers to improve the health and efficiency of this group. It seems to be the custom to give vacations to executives and office employees. This does not necessarily mean that, because a firm is progressive enough to grant vacations for other reasons, thus forcing other concerns to establish similar plans in competition, the real reason for a vacation plan is competition, custom or whatever you may call it. Medical science and good business sense have proved the value of such periods.

The question of how desirable vacation plans are for factory workers is still one on which conflicting views are offered.

There are and will be abuses of the vacation privilege as in everything else. The question management will have to decide is whether it can ignore the requirements of competition and the more fundamental changes in our lives which science and the growing complexity of our business, industrial and economic structure are bringing about.

Appendix 1

Vacation Plan of a Life Insurance Company

Section 1. All employees who come into the service of the company at the home office prior to Jan. 1 in any year will be allowed a vacation of twelve days. Two days will be allowed for each month of service from Jan. 1 to June 1; that is, those who come into the service in January will be allowed ten days, those in February eight days, those in March six days, those in April four days and those in May two days. Special arrangements for vacations

during the current year will be made for employees coming into the service of the company after June 1.

Section 2. *Five years of continuous service* in the home office of the company will entitle the employee to two additional holidays. Ten such years of service will entitle the employee to four additional holidays. Fifteen such years of service will entitle the employee to six additional holidays. Twenty such years of service will entitle the employee to eight additional holidays. Twenty-five such years of service will entitle the employee to ten additional holidays. Thirty such years of service will entitle the employee to twelve additional holidays.

Section 3. In addition to the above, an employee who has been with the company three months, who has not missed attendance at the office for six consecutive weeks and who has not been tardy at any session, will have an extra half-holiday for each of such periods of six weeks, earning first a morning session, then an afternoon session, alternately.

The above practices apply to clerks and unofficial department heads, although the latter are not held to a strict monitor record of their attendance.

No definite rules have been indicated for the vacations of officers, but it is the general practice for an officer to be away not more than three weeks during the year, except for the occasional four weeks' vacation of a senior executive.

Appendix II

Vacation Policy of a Large Bank

Vacation schedules should be so arranged that:

a. Only a minimum number of employees will be away at one time and vacations will be spread over such a period that the work can be handled with no curtailment of the service to customers, with a minimum of overtime, and without additions to the staff.

b. Too many officers are not away at one time, as adequate provision must be made for the proper performance of the duties of each officer during his absence.

The vacation periods of members of the official and clerical staff are as follows:

Official staff	
Vice president.....	1 month
Auditor.....	1 month
Trust Officer	
Assistant {	} 3 weeks
Vice presidents	
Secretaries	
Trust officers	
Managers	
Auditors	
Clerical staff	

Period of employment beginning prior to Jan. 1 of current year	2 weeks
Period of employment beginning during January or February of current year	1 week
Period of employment beginning during the month of March of current year or subsequently	No vacation

It is the policy of the company that no vacation period of either officers or other employees be divided.

When a pay day falls within the vacation period, salary due on that date is paid to employee when leaving. When a pay day falls immediately *after* the vacation period, salary due on that date is not paid when vacation starts, except on special written request of the department head after careful consideration has been given to the advisability of making such payment.

In the event of a resignation of a member of the staff, an allowance, in lieu of vacation, will be made on the following basis:

a. To those whose length of service has been one year or more, and who have not received a vacation for the current year..... 2 weeks' salary

b. To those whose length of service has been eight months, but less than one year, and who have not received a vacation for the current year..... 1 week's salary

Ordinarily, the above policies will apply only during the period from June 15 to Sept. 15.

NOTE. Those members of the staff who may be discharged or requested to resign are to receive no vacation salary. Two weeks' salary, in lieu of notice, is usually paid in such cases, depending upon the circumstances.

MENTAL HEALTH IN INDUSTRY¹

BY RICHARD S. UHRBROCK, *Head, Statistical and Research Department, Industrial Relations Division, The Procter and Gamble Company*

The mentally healthy individual is adjusted to his environment. He is responsive to the fluctuations in its rhythm and tempo, and finds it satisfying to adapt himself to changes that are constantly taking place about him. The mentally unhealthy person on the other hand, is out of tune with the vital, dynamic forces that are changing the world in which he lives. When these forces intrude into the retreat which he has built for himself, he is disturbed and unhappy. The mentally healthy meet life eagerly; the unhealthy are engaged in a perpetual search for peace and security in a vaguely defined world of fantasy.

We may recognize certain disturbing factors in modern industrial civilization that tend to swing the unstable worker beyond the range that we call normal. We may note certain stabilizing forces that operate to increase industrial efficiency and individual happiness. The man who is unhappy in his job is mentally ill. Some cases of such illness are temporary and recovery is rapid. Chronic cases may stretch out for years and render the individual incapable of useful work. Mental health in industry is dependent upon two diametrically opposed sets of forces. One set of factors disturbs and annoys the worker; the other set stabilizes and satisfies him. Some of the disturbing and stabilizing factors are within the control of the employer. In a sense, he is responsible for the degree of mental health, or ill health, that exists in his working force.

¹ Among the significant books and articles in this field are the following:

ANDERSON, V. V., "Psychiatry in Industry," Harper & Brothers, New York, 1920

Factors That Make for Mental Ill Health. Worry, fear, daydreaming on the job, sudden outbursts of temper, or "nervous breakdowns" are danger signals that indicate the presence of disturbing forces that are reducing the effectiveness of the individual worker. They are evidences of mental ill health. We must search beyond such facts if we are to reach causes. We may assume that the mentally ill individual has some physical defect, some digestive disturbance, or some glandular difficulty that makes him sensitive to the disturbing forces that are present in his environment. Only a thorough physical examination will reveal such causes. Actual physical fatigue, due to long working hours, may have reduced his resistance. The non-rhythmic pounding of heavy machinery may have distracted him to the point where he makes a false move and becomes the victim of an industrial accident. An unpleasant scene at the breakfast table may give an emotional coloring to the activities of the working day. Worry due to debt lowers industrial efficiency. It has been stated that, "The average wage earner, with a family, finds that he must borrow money at least once every two years to meet some emergency or unforeseen expense which cannot be paid from current income or from savings." Wage earners, with income under \$2,000 per year, have medical bills that average \$71 annually. The average funeral entails an outlay of \$363. The factor of debt, with the attendant risk of garnishment of wages and the possible loss of the job, are disturbing factors of major importance in creating unhealthy states of mind.

We have listed five factors that make for mental ill health in the industrial situation. They are fatigue, distraction, home worries, debt, and job insecurity. That list may be added to indefinitely. There are two others, however, that deserve consideration. When ambition is greater than ability, the disappointment that often results may be classified as an unhealthy mental state. This disappointment may even lead into a definite case of insanity, in which the individual compensates for his failure by building up a world of fancy in which all his dreams come true. Finally, there is no doubt but that our present system of inducting new workers into industry creates many cases of mental unrest. Learning is not a continuous process. In acquiring skills we make fairly rapid progress at first as we are taught new, simple habits. But soon there comes a time when progress seems to stop. We put forth just as much effort, but no improvement is apparent. In the

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WILLIAMS, FRANKWOOD E., "Mental Hygiene," American Library Association, Chicago, 1929.

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language of the psychologist, we are "on a plateau," so far as our learning curve is concerned. We are perfecting our rudimentary habits, before we can add the higher order of skills. Without doubt, many young people are "bawled out" and made extremely unhappy during this natural and necessary stage in learning a new job. Many become discouraged and quit after being assured by their foremen that "they are too dumb to learn." They get another job and the experience is repeated. Soon they come to believe that they are not quite up to par, and this mentally unhealthy attitude persists through life. They have joined the group that never quite comes through.

Stabilizing Factors. In any body of men there are stabilizing factors that operate to create a healthy mental attitude. What are the characteristics of the healthy, well-integrated worker? In the first place he is physically fit. His resistance has not been lowered to the point where worry, fears, and distractions can get a foothold. He has insight concerning his abilities and his opportunities. He does not overestimate, or underestimate himself to a marked degree. His work uses his major abilities. He has profited by supervised training, and he has acquired genuine skill in his work. His skill is known and respected by his fellow workers. He is accorded a certain degree of leadership in some field of his own choosing. He has accepted community responsibility. He is vitally interested in movements, or forces, that make his town a better place in which to live. He receives sufficient remuneration for his work to maintain the standard of living to which his education and skill entitle him; he feels secure in his job, and has a well defined life plan. He has certain regular recreations that are physically and mentally stimulating. Finally, he feels that he is making progress in his work. He knows that he will reach higher goals. He is not waging a losing battle against economic odds that are too great for him. He is in tune with his environment, and his personality is expanding.

There is no one way of insuring mental health in industry. Such a state is the resultant of many conflicting forces. The mental health in industry increases as the stabilizing factors of employment and community living outweigh the disturbing elements. Each maladjusted individual must be considered separately in order to discover the underlying causes. The employer's problem is to eliminate causes as they are noted, and to introduce as many stabilizing factors as possible into the situation over which he has control.

MUTUAL BENEFIT ASSOCIATIONS¹

BY J. DOUGLAS BROWN, *Director, Industrial Relations Section, Princeton University*

One of the most propitious developments in civilization's never-ending campaign against poverty and dependency is the increasing use of the method

¹ A study made by the Industrial Relations Section, Princeton University, reprinted by permission.

of insurance. In no field have more important strides been made than in that of industrial insurance. Group insurance covering industrial workers now provides indemnification in case of death, disability, accident, and, through endowment policies, old age. Insurance against sickness, except industrial disease, has made much less headway and it is in protecting the industrial worker against this contingency that the mutual benefit association has most to offer. The method of the latter is that of insurance, since the group protects the individual through the averaging of risks. The procedure, however, is less formal and in the past has been less dependent upon company initiative. For these reasons, mutual benefit associations date back many years, and even with the great growth of group insurance, continue to have an important place in the financial protection of employee groups.

Few individuals among a group of wage earners are sufficiently well paid or thrifty to prepare themselves or their families through savings alone against *all* the more severe misfortunes which may befall them. To do so would require too great a limitation upon the present standard of living, unless the wage earner is unusually fortunate. For this reason, the method of insurance has become widely developed. With industrial life, accident, and endowment group insurance and similar individual insurance in effect or available, the employer and employee in many progressive companies still face the problem of safe-guarding the worker against the contingency of sickness, and loss of income caused by ill health. The lower cost of the mutual benefit plan through self-imposed economy, its informality and greater intimacy, and the by-product of group feeling often developed have assured the plan a place in the industrial relations program in many companies. While group insurance may absorb the function of indemnification in case of death, which most mutual benefit plans have assumed in the past, protection against illness will probably remain a proper task of a mutual association. For this reason, the Industrial Relations Section has analyzed a group of mutual benefit plans with the purpose in mind of presenting their essential features to the industrial executive who has never participated in the introduction or administration of an association.

Rather than cover statistically the several hundred plans in existence, the Industrial Relations Section has based the following analysis upon one hundred well-developed plans from among the range available in its files. An attempt has been made to indicate the modal plan rather than discuss at length the unique features in existence in some associations. Each company has its own peculiar problems which necessitate deviation from the mode. More extensive studies such as those of the National Industrial Conference Board published in 1923 and 1924 are highly recommended for those faced with the detailed problems of organization or administration of a plan.

Provisions in the Constitutions and By-laws of Mutual Benefit Associations.

1. Purposes. The printed constitutions and by-laws of mutual benefit associations practically always state at the outset the names of these organizations and the objects for which they exist. The fundamental purpose, as it appears in these statements, is that of providing definitely stipulated payments for members in case of disability caused by sickness or accident. A large number of plans include, also, the payment of a specified sum to the

widow or other beneficiary in case of the death of a member. Mutual benefit associations are thus, to a large extent, the employees' attempt to provide protection for their dependents in case sickness or death cuts short the family income.

Other activities, however, have been assumed by benefit societies or added to their functions, and have come to be embodied in the constitutions of many as objects of the organization. The constitution of the Northern States Power Company Employees Benefit Association, for example, includes the organization and maintenance of a club to provide social, athletic, and educational advantages for its members. A similar provision is found fairly frequently. The Ohio Box Board Employees' Mutual Benefit Association includes among its objects welfare work among its members. The Wright Aeronautical Mutual Benefit Association has as an objective the promotion of all manner of educational, charitable, and benevolent activities and the encouragement of friendship among its members. The Ke-Nash-A Club, made up of employees of the Kenosha Division of the Nash Motors Company, devotes 40 per cent of its income to entertainment and the publication of the club paper. Several associations provide, either in the statement of their objects or elsewhere in the constitution, for making loans to employees. The unemployment insurance plan of the John A. Manning Company, although financed entirely by the company, is administered through the Manning Welfare Association. The Mutual Benefit Association of Pennsylvania Railroad Employees, composed of some 20,000 members, provides death and disability benefits and in addition offers a means for the purchase of Pennsylvania Railroad securities and for cooperative buying of household supplies and personal necessities. Many other examples might be added to illustrate the fact that mutual benefit associations have often come to carry on various forms of personnel or welfare work in addition to their fundamental work of providing financial relief in case of sickness or death.

2. Membership. *a. Compulsory or Optional.* Membership may be required as a condition of employment or left to the choice of the employee. There seems to be a very general feeling that it is better not to make membership compulsory, and few plans are organized on this basis.

At the same time, there is every reason why many companies are anxious to have a large proportion of their employees belong to the benefit association if one exists. First of all, membership is undoubtedly to the employees' advantage. Small as the benefits are in many cases, they are a great aid in time of emergency and without them some families would face destitution. If, therefore, the employer can encourage the members of his organization to make systematic provision for protection in this way, he is indeed advancing their best interests. The membership of a fairly large proportion of the employees of any concern is essential for the safe functioning of the association. The same principle applies here as in group insurance, that it is necessary to have approximately 75 per cent or more of the possible membership of any group in order that the poor risks may be sufficiently balanced by the good risks to make the group as a whole an average risk. Otherwise the group will be below the average, since older employees and those in poor health would be most likely to join.

Membership in the mutual benefit association is encouraged in many ways. The company frequently pays into the treasury of the association a sum equal to that paid by the employees as dues. In other cases, the association pays benefits for sickness and accident only and the company provides life insurance for members of the association. The association is brought to the attention of new employees by means of personal letters, notices in pay envelopes, publicity on the company bulletin boards, and other publicity, and it is kept before all of the employees by frequent articles in the employee magazines.

b. Age Limits. In approximately one case out of four, employee applicants for membership must be within certain age limits. The minimum ages required are generally sixteen or eighteen years, although twenty-one years are specified in a few cases. The maximum age at which employees may join, in plans having such limitations, is most frequently fifty or sixty years, although in a few associations it is placed as low as forty-five years. Instead of refusing to accept employee applicants who are over the ages specified, other associations accept them under certain conditions only, or accept them with the understanding that they will receive less than the usual benefits in case of sickness or accident. The Armstrong Cork Company limits membership to those who were under sixty when they began service with the company. The Pacific Service Employees' Disability Plan limits membership to those under fifty-five years of age except that those older may become members by passing a satisfactory medical examination. The Employees' Benefit Association of the International Harvester Company provides that employees over forty-five years of age when they join the Association will be entitled to a smaller death benefit than other members.

c. Other Requirements. In a few cases, associations are limited to white employees. In several cases, women are excluded from membership. One association excludes married women. On the other hand, the Avery Mutual Aid Society of B. F. Avery and Sons admits the wife of a member in good standing, or the widow of a deceased member, or the daughter or sister of any member in good standing. The Intertype Mutual Benefit Association accepts for membership only employees who were born in the United States or are citizens or have their first papers.

d. Waiting Period. In order to eliminate temporary employees, most benefit associations require a specified length of time before new employees are eligible to membership. Thirty days is the most usual requirement, although, two, three, or four months and even a year are required in a few cases. A waiting period between the time when the member first joins and the time when he is eligible to benefits is found in somewhat less than half the plans. Such a provision seldom applies to disability caused by accident. It protects the association in the case of members who might join in order to obtain benefits for some condition which had already partially developed.

The National Industrial Conference Board, in its study of mutual benefit associations, suggests two weeks as a reasonable period before benefits become fully available.

e. Initiation Fee. A small fee is frequently required at the time of joining. This varies in general from 25 cents to \$1.25. The Norton Company Mutual

Benefit Association, however, requires an admission fee of from \$2 to \$9 according to the age of new members.

f. Physical Examination. Upon applying for membership in the association, the employee is either (1) required to have a physical examination by a physician in the employ of the company of the association or is (2) required to furnish a statement of satisfactory physical condition from a physician acceptable to the association or (3) required to answer a series of questions concerning his physical condition, either as a part of his application form or separately.

As a protection to the association against unduly heavy disability payments, the applicant is generally required to file a statement that he has no chronic ailment or physical condition which would tend to make him a charge on the association. If he has such ailment or condition, he is frequently allowed to join by signing a waiver covering benefits for sickness resulting from it. Thus it is evident in a large number of cases that no examination is required at entrance except the employees' answers to a set series of questions or a statement from a physician. This, in connection with a waiver, may prove to be a protection to the association, but leaves the employee in the same condition as before. A growing number of associations are coming to feel that their main protection and, what is more important, their chance of service to their members lies in a program of health improvement. This includes a complete examination at the outset, followed by various forms of individual treatment or health information and advice. In a very few cases, it includes also annual or periodic health examinations.

g. Termination of Membership. In the majority of cases, membership terminates if employment with the company terminates. In such case, the employee forfeits all rights to any share in the association funds. Certain companies, however, provide that in case of temporary lay-off, the employee may retain his membership for a specified time, seldom longer than three months, if he continues to pay his dues and does not accept employment with another firm. Members of the Norton Company Mutual Benefit Association may, on the contrary, retain their membership as long as they reside in Worcester, Massachusetts. Otherwise their membership ceases, as in other plans. Members of the Employees' Benefit Association of the Phelps Dodge Corporation who leave the service of the company may retain their membership as far as eligibility to the death benefit is concerned. Members of the Jeffrey Mutual Aid Association may retain their full membership after leaving the employ of the company, and members of the Intertype Mutual Benefit Association may retain their membership by paying slightly increased dues. Such provisions are, however, comparatively rare and, for the most part, employees who leave the company forfeit their membership and all dues paid up to the date of their leaving. Dues paid beyond the date on which employment is terminated are returned. Membership may be terminated, also, by failure to pay dues for a given length of time or by attempt to defraud the association by claiming benefits when not entitled to them.

8. Dues and Other Income. *a. Members' Dues.* Mutual benefit dues are charged either (1) on a flat-rate basis or (2) on a graduated scale with both dues and benefits varying according to salaries. Where a flat rate is

used, the amount most frequently charged is 50 cents a month or 10 cents a week, but many associations now charge as much as \$1.00 or \$1.25, a month and in certain cases \$2.00. Where graduated dues and benefits are used, employees are classified accordingly to salary received or are given a choice of benefits and pay dues accordingly. In such plans the maximum salary group is generally composed of those receiving \$40.00 or more a week. This makes it possible for higher executives to help support the association without having the amount of their salaries become common property and without asking the association to pay them benefits out of proportion to those received by other members.

The same effect of varying the dues to suit wages is achieved in those plans which charge a percentage of wages. One per cent or somewhat over one per cent are the rates usually charged, but they do not apply to wages or salaries over approximately \$40.00 a week. In the Employees' Benefit Association of the International Harvester Company, dues are based on members' eligibility to benefits under the workmen's compensation laws of the states in which the company operates. If members are eligible to benefits under such laws, they pay dues of $1\frac{1}{2}$ per cent of the wages or salary they are receiving, but not over 58 cents a week. If they receive no benefits from compensation laws, they pay dues of $1\frac{3}{4}$ per cent of salaries or wages and receive correspondingly greater benefits in case of sickness. Dues for death benefits are two cents a week and are collected separately.

b. Pay-roll Deduction of Dues. In considerably over half of the plans, dues are deducted by the company from the employees' checks or pay envelopes on specified dates. This is done only after a written authorization for such action has been signed by the employee. Generally such an authorization is made a part of the application blank. In other cases, dues are paid to collectors or paid at certain specified places by a set date in the month. If they are unpaid for longer than a given length of time, the member is suspended or dropped.

c. Payment of Dues during Disability. Except in a few associations, dues must be paid during absence for sickness as well as while earning. In some cases, they are deducted from the benefits. A few groups have provided, on the other hand, that when members are absent because of disability their dues shall stop until such time as they are able to resume work.

d. Assessments. The most usual provision with regard to assessments is that if the association fund becomes less than a set amount, a limited number of assessments of not over a prescribed sum may be levied in any one year with the approval of the officers and the board of trustees or board of directors in charge of the association. At the same time, if the fund becomes greater than the set sum, dues may be decreased or omitted until the fund falls to a smaller sum. In a few plans, the prescribed limits are an average of a certain amount per member. Assessments greater than those otherwise provided for may be made in some plans upon the authorization of a special meeting called for that purpose. Whether there is any definite agreement to that effect or not, mutual benefit associations have always the possibility of receiving company aid in time of emergency and frequently do receive such aid when otherwise an assessment would be necessary. This relieves them

from the necessity of carrying as heavy reserves or operating on a basis as sound actuarially as if they stood alone.

e. Company Contribution to Operating Funds. In so far as constitutions state, approximately one company out of four contributes a prearranged amount to the funds of its benefit association. Where this is done, the amount of the contribution is frequently a sum equal to that paid as dues by employee members. Other employers contribute an amount equal to 10, 20, 25, or 30 per cent of the members' dues, or an amount not less than 1 per cent of the pay roll. The International Harvester Company agrees to pay \$25,000 into the Association fund each year if the average membership in the Association has been 50 per cent of the total number of employees in the company's manufacturing plants and \$50,000 if the membership has been 75 per cent or more.

There are several ways, often not appearing in the constitutions, by which the company contributes directly or indirectly to the association funds. In a large number of cases, it will be found that the company assumes the cost of the management of the association, at least as far as office space and clerical help are concerned, to say nothing of the amount of benefit work done on company time. The first aid, medical, and nursing departments, where they exist, are closely connected with the examination and follow-up work of the mutual benefit association, but are generally financed by the company. In many plans, since the growth of group insurance, the company pays for the group life insurance, leaving only the sickness and non-occupational accident disability the concerns of the mutual benefit association.

f. Other Sources of Income. The constitutions and experience of mutual benefit associations reveal several other sources of income. Social and athletic activities may be assets or liabilities as far as the treasury is concerned. The yearly dance for the benefit of the association is almost always a great help financially as well as socially. A counter in the company cafeteria or some other convenient location where foods, candy, and cigarettes are on sale often provides a considerable supplement to employees' dues.

4. Sickness and Accident Benefits. *a. Rates per Week.* The total amounts paid by the mutual benefit associations in case of sickness or accident depend on several factors, chief among them the rate paid per day and the number of days for which benefits will be furnished. As with dues, the same rate may apply to all members of the association or different rates may be used for different groups depending on their wages, length of membership, or other considerations. Flat rates average somewhat over \$8 a week. The tables on page 1287 are typical groupings of members in plans where the rates vary with the salary or otherwise.

b. Waiting Period. In practically all plans, the sickness benefits do not begin until after a specified length of time, generally six or seven days. The effect of this is, of course, to eliminate all short illnesses from coverage under the plan and to save the resources of the association for the more serious cases. Many plans, although not all by any means, provide that if a member is ill longer than a given time, as for instance four weeks, benefits shall be paid from the first day of illness. Accident benefits, where paid, generally begin immediately.

THE WESTINGHOUSE AIR BRAKE COMPANY RELIEF DEPARTMENT

Class	Wages or salary per month	Dues (monthly)	Disability benefits per week	Death benefits
I	Under \$35.00	\$0.50	\$ 5.00	\$150.00
II	\$35.00 to \$55.00	0.75	7.50	150.00
III	\$55.00 to \$75.00	1.00	10.00	150.00
IV	\$75.00 to \$95.00	1.25	12.50	150.00
V	\$95.00 or over	1.50	15.00	150.00

THE COMMONWEALTH EMPLOYEES' BENEFIT ASSOCIATION

Class	Wages or salary per week	Dues (semimonthly)	Weekly benefits (sickness, non-occupational accident)
A.....	Up to \$20.00	\$0.45	\$10.00
B.....	\$20.01 to \$25.00	0.55	12.50
C.....	\$25.01 to \$30.00	0.65	15.00
D.....	\$30.01 to \$35.00	0.80	17.50
E.....	\$35.01 to \$40.00	0.90	20.00
F.....	\$40.01 to \$45.00	1.00	22.50
G.....	\$45.01 to \$50.00	1.15	25.00
H.....	\$50.01 to \$55.00	1.25	27.50
I.....	\$55.01 to \$60.00	1.35	30.00

SHEFFIELD FARMS, INC., MUTUAL BENEFIT ASSOCIATION

Membership groups	Dues (monthly)	Sickness and accident benefits, weekly	Death benefits
Class A (member 1 year).....	\$1.00	\$20.00	\$200.00
Class B (member less than 1 year)...	0.75	15.00	150.00

JENNIE NATTANS MUTUAL BENEFIT ASSOCIATION (READ DRUG AND CHEMICAL COMPANY)

Class	Average weekly earnings	Dues (weekly)	Sickness and accident benefits, weekly	Death benefits
A.....	\$10.00 or less	\$0.05	Two-thirds of salary per week, payable weekly	Group life insurance, \$500.00
B.....	over \$10.00 to \$20.00	.10		
C.....	over \$20.00 to \$30.00	.20		
D.....	over \$30.00	.30		

c. Length of Time for Which Sickness and Accident Benefits Are Paid. Stated limits are placed on the length of time for which associations will continue payments in case of sickness or accident. Thirteen weeks is the most usual period and next in frequency in the plans studied are twenty-six and fifty-two weeks. The following are typical provisions regarding the period for which payments will be made:

A member in case of sickness or accident which disables such member so that he or she is unable to work shall (subject to the limitations and provisions of these by-laws) be entitled to receive from the Association sick benefits at the rate of \$2 per day, not including Sunday.

No benefits shall be paid for the first week of disability.

No member shall be paid benefits for a total of more than thirteen weeks in any period of twelve succeeding months.

If the board of directors determine that a disability is due to a recurrence or continuance of a chronic disease, ailment, or injury on account of which thirteen weeks' benefit have been already paid, the disabled member shall not be entitled to further benefit on account of disability due to such disease, ailment, or injury.

d. Accident Benefits and Workmen's Compensation. Cases of disability caused by occupational accidents and coming, therefore, under the workmen's compensation laws are treated in one of two ways by mutual benefit associations: Either (1) the association makes no payments in such cases, confining itself entirely to non-occupational accidents or (2) it makes only such payments as will supplement the amount received through workmen's compensation. The first of these possibilities is illustrated by the following provision which is found in a large number of mutual benefit constitutions:

No benefits shall be paid to members or their personal representatives for disability or death for which compensation is provided under the workmen's compensation law of any state.

Payments supplementary to workmen's compensation are provided for in several ways. The mutual benefit association may pay its regular benefits until workmen's compensation payments begin, or it may pay such an amount as, added to the workmen's compensation payments, will equal the usual association payments, or it may pay a smaller amount than in other disability cases.

The Workers' Benefit Fund of the Minneapolis Steel and Machinery Company subtracts the amount of payments made through the workmen's compensation from the amount due by reason of membership in the benefit fund and pays the difference. Although the provisions differ somewhat in different cases, the attempt is to supplement rather than to duplicate compensation payments.

e. Benefits for Employees on Salary. Salaried employees generally receive full pay during disability, at least for a certain length of time. If they receive benefits from the association also, their income during sickness will be greater than their regular pay which will encourage abuse of the disability privilege. Certain companies meet this situation by ruling that such members shall receive no sickness or accident benefits from the association. Their only reason for belonging to the association, apart from a desire to help it to be a

success, would then be the sum paid the beneficiaries in case of member's death.

Another solution of the difficulty is to arrange salary payments and association benefits so that they shall together be equal to the employees' full salary or somewhat less. The company could then consider continuing the full payments after such time as the association payments had stopped.

f. Medical and Hospital Care. Certain mutual benefit associations, in conjunction with medical departments of the employing concerns, are able to furnish members of their medical staff with medical attention and in some cases, with hospitalization if necessary. The Stanocola Medical and Hospital Association of the Standard Oil Company of Louisiana furnishes benefits for its members as follows:

All phases of medical treatment and surgical attention available from the staff of doctors selected by the Association for the members and their dependents.

The Association will also furnish special nurses and hospital facilities to an amount not exceeding \$250 whenever either or both are needed in the judgment of the Association doctor, provided that the hospital treatment and the use of a special nurse for such member or his dependent shall be under the supervision of the Association doctor . . .

The Kimberly-Clark Company Mutual Benefit Association furnishes benefits for its members as follows:

Payments for each working day lost for a period not longer than fifty-two weeks will be made at the following rate:

For sickness or off-duty accident.	\$1.40 per day
For on duty accident—first week.	1.40 per day
Remaining fifty-one weeks.	0.70 per day "

Extraordinary or Operative Benefits

In case of disability classed as due to sickness, should the nature of the illness be extraordinary or necessitate operative measures, or should the case require hospital service to promote recovery, the Association may, upon approval of the medical examiner or the secretary, pay 90 per cent of such bill or bills, providing the member has been in the Association six continuous months or longer and subject to the following conditions

Dental Benefits

Members of the Kimberly-Clark Company Mutual Benefit Association who have been members for six continuous months or longer shall be entitled to *annual* financial assistance on their dental bills to the extent of 50 per cent of such bill or bills provided that such proposed dentistry shall have the approval of the dentist employed by the Kimberly-Clark Company and Neenah Paper Company *before the work is done* . . .

In no case shall the Association be liable for more than \$25 for any member in any calendar year . . .

Optical Benefits

Members of the Kimberly-Clark Company Mutual Benefit Association who have been members for six continuous months, or longer, shall be

entitled to annual financial assistance on their optical bills to the extent of 50 per cent up to a maximum of \$7.50 on any one calendar year.

Proper authorization from one of the medical examiners of the Association must be obtained before incurring any charge under this clause.

g. Mutual Benefit Associations and Health Preservation. Among recent trends in mutual benefit association activity, is that toward increased attention to health preservation. This is due in part to the fact that, with the growth of group insurance, many benefit associations find their work of collecting dues and paying benefits taken over by the insurance company. There still remains much work for the association to do, however, and most logical is that of interesting its members in improving the health experience of the group. This means less illness for individual members and therefore greater production for the company. In addition, it may result in lower insurance rates. The Mutual Aid Association of Eaton, Crane and Pike Company, for instance, carries both death benefits and disability benefits through an insurance company. In addition to the benefits usually offered, this association provides periodic examinations by the Life Extension Institute and daily visits to the home of disabled members by a nurse from the Pittsfield Visiting Nurse Association. It is not, of course, necessary for an association to insure its benefits in order to adopt a program of health improvement. The returns from such a program will be evident both in decreased benefit payments and in lowered insurance rates, if insurance is provided.

5. Follow-up. One of the most difficult problems with which mutual benefit associations have to contend is that of protecting themselves from malingering. If the associations or their employing concerns have medical departments so that a doctor or nurse can investigate cases of sickness, most false claims can be eliminated. This, however, is impossible in a large number of cases. Investigations have to be made by special committees of members and if there is no company physician, a statement from the physician attending the case is accepted. This, of course, leaves many openings for attempts to defraud the association. Until human nature becomes more honest than it is at present, mutual benefit organizations will find it necessary to investigate their claims with all vigilance. However, company nurses or personnel workers, to say nothing of employee committee members, have frequently found that these investigation interviews provide opportunities for genuine helpfulness and for improved personnel relations. If the investigation is made by a doctor or nurse, assistance at the time of crisis can be accompanied by health instruction for the future and both the association and the member be gainers.

6. Death Benefits. Payments to beneficiaries in case of members' death are a part of the plan of most associations. In a few cases, death benefits are the only benefits paid, although this is quite unusual. These payments, when made by the association are generally from \$50 to \$200. In some cases, provision is made, also, for payments of a given sum, as \$50, to a member in case of the death of husband or wife or child.

Death benefits are sometimes paid by assessments levied each time a member dies.

Since the growth of group insurance, death benefits are coming to be handled more usually by this means. The company frequently pays the premiums in these cases, and may insure all of its employees, or members of the mutual benefit association only. The amounts paid in case of death are larger and more likely to be graded according to length of service when paid by the company by means of group insurance than when paid by an association.

7. Administration of the Association. *a. Company Participation in Management.* It is generally accepted by those connected with mutual benefit administration that, as long as the association does not suffer, it is best to have its administration in the hands of employee members as largely as possible. Since, however, a strong hand is often needed in protecting the association against fraudulent claims and undue favoritism to certain departments or members, companies prefer to retain some authority. In some cases, this is accomplished by having an executive secretary who is a company appointee in charge of the association. It is accomplished in other cases by having half or a majority of the association board of directors appointed by the management of the company. In other cases, one or two representatives from management have been felt to be sufficient.

b. The Executive Board. A board of trustees or a board of directors consisting of the officers of the association and representatives elected by various departments is generally the chief controlling body of the association. This body has the final decision on all disputed questions, frequently appoints certain of the administrative officers, and, in general, controls the policies of the association.

c. Officers. Officers are generally elected by the membership and consist of a president, vice president, secretary, treasurer, and other officers as needed. Their duties are those usually pertaining to these offices. Since the secretary and treasurer carry relatively heavy burdens, they are frequently paid a small sum.

d. Committees. The committees appointed or elected to cooperate with the officers and the executive board are those usually found in other associations, except that the visiting committee plays an important role. Where there is no company doctor or nurse, this committee generally has the responsibility of deciding whether or not applications for benefits shall be approved. A certain number of visits to the sick member are often required and the constitution and by-laws provide also, as far as possible, for the submission of proof of disability on the part of the applicant and list conditions under which benefits will not be paid. This committee, however, is often responsible for decisions concerning disability payments, subject to review by the board of trustees.

Questions of Policy. While many questions of detail and policy arise in the consideration of a mutual benefit plan, it is possible to cover but a few in a brief memorandum.¹ Six very usual questions have been selected for discussion to summarize existing opinion concerning such plans.

¹ See *A Manual for Mutual Benefit Associations*, National Industrial Conference Board, 1924, for a very practical, detailed exposition of the program to be followed in inaugurating a mutual benefit association.

1. *Is not the inauguration of a plan an undue extension of employer paternalism?*

Yes, if the great majority of employees have shown the foresight and ability to prepare themselves for the contingencies covered or if a program of education will develop a realization of the importance of such preparedness. No, if wage groups are present in the plant, who are financially unable or psychologically unlikely to prepare for future contingencies. It is less paternalistic to help a man to help himself in the most economical way possible than to allow him to become dependent in time of need upon company or fellow-employee generosity, or the gratuitous services of charitable institutions. If through fraternal or trade union organizations the employee is led to protect himself, by so much a company-fostered plan is unnecessary and paternalistic.

2. *What are the advantages of mutual benefit plans over company financed relief?*

The word *mutual* is highly significant. As long as employees as a group contribute a major portion of the cost of benefits, the plan is an effective agency for education and eventual elimination of any element of paternalism. Contributory plans, while somewhat more troublesome to administer, contain that element of self-respecting responsibility which is truly American. It is easy but expensive to foot all the bill.

It is on the side of *prevention* rather than of *indemnification* or relief of the economic loss due to sickness that company financed plans are most justifiable. The most important trend in company programs for the protection of the wage earner is that toward elimination of accidents, industrial disease, and non-occupational sickness. Few mutual benefit associations are able to finance adequate medical and nursing staffs, however. The company, by assuming the burden of the salaries of doctors and nurses and of hospital overhead, not only improves the quality of the services afforded but is able to place the proper emphasis on the prevention of sickness and on the long-run stabilization of employee effectiveness in a way which employees, even as a group, cannot afford to do. The medical and nursing staff can be used to reinforce and systematize the mutual benefit association's work of financing the employee facing a loss of wages on account of sickness or non-occupational accident.

3. *Why not allow group insurance to cover all risks including sickness as well as accident and death?*

Group sickness insurance, because of higher indemnities, greater moral hazards, inclusive coverage of contingencies, and selling costs, is more expensive. It is less intimate and loses in part the advantages of mutual interest and group feeling as well as that loyalty toward and respect for fellow employees which reduces the willingness to malingering or to feign illness at the expense of the group. Death, however, is not only a sharply defined contingency which is seldom self-encouraged but which must be indemnified by a much larger sum to provide for surviving dependents. The lessened intimacy and higher cost of commercial insurance must be considered secondary to absolute certainty and ample indemnification in considering the best means of meeting this need. Further, actuarially, life (and accident) insurance has reached a

much greater degree of exactitude than sickness insurance. In the latter field, the mutual benefit association can perhaps adjust itself more economically to the needs of the local situation in arriving at proper rates as well as in protecting itself against unfair claims. The advice of an actuary is of greatest importance in determining rates and benefits, where insurance is not used.

4. *Can a small company safely inaugurate a mutual benefit association without reinsurance?*

No, except at the risk of assessments which may end the life of the association at the time it is most needed. To be able to withstand a drain due to an epidemic, the membership of the association must be sufficiently large to spread the risk over a group of marked diversity. The insurance principle does not properly apply until an averaging of risks takes place. The employees of a small company are too limited in number for proper averaging of the incidence of normal sickness and even a large company may well reinsure if residential concentration of employees makes epidemics more likely.

5. *Should the reserve plan or the assessment plan be followed?*

The reserve plan, in which dues are sufficiently high to meet all contingencies, is safest, easiest to administer, and less likely to arouse dissatisfaction once wide membership is secured. The assessment plan, while possessing the advantage of apparent economy at the moment, is more likely to cause fluctuating membership and delay in meeting obligations. A combination of the two methods is, perhaps, best. Excessive reserves are unfair to non-beneficiary members leaving the company's employ and high dues discourage wide membership in a new plan. Lower dues and infrequent assessments in times of heavy drain may be most satisfactory to all concerned.

6. *Is a mutual benefit plan to be managed by the employees?*

In most companies there are few employees possessing that combination of ability, sustained interest, and breadth of contact among their fellow employees which is necessary if they are to administer a plan without company assistance. Those possessing these qualifications are likely to be of the supervisory or office staff. It is better to recognize the management's interest in the plan directly than await the drift toward the election of management representatives by the workers after unfavorable experience with association officers elected from the rank and file alone. The company must become, directly or indirectly, an influence toward fairness, efficiency, and conservatism. It must emphasize the importance of actuarial advice. Further, in most plans use is made of the facilities of the company office in the collection, management, and disbursement of association funds. Even if no additional contribution is made by the company, the provision of these facilities warrants some company representation in the administration of the association. While every effort should be made to develop active and responsible officers elected from the rank and file, the importance of safeguarding employees' investment in the association and the dissatisfaction resulting from possible favoritism, inefficiency, or failure to meet obligations promptly does not allow company officers to be too diffident in assuming some responsibility for the proper management of association affairs. The extent of the assumption of responsibility may vary from the appointment of a large representation on the executive board of the association, including

the appointment of a treasurer, to occasional conferences with the employee officers of the association in order to review and discuss any problems which have developed. The assurance of careful and frequent auditing of books is most certainly a proper company function.

ACCIDENT PREVENTION

BY ARTHUR H. YOUNG, *Secretary, Industrial Relations Counselors, Inc.*

Safety work originated in the attempts of certain individual employers to reduce the terrific human waste of accidents, and has been stimulated by workmen's compensation legislation. It is now generally agreed that accident prevention efforts will be productive of the best results if they are planned to include:

1. Organization, through which the general policies of an industry or company, with respect to the problem, are administered and executed.

2. Supervision, through which the supervisors are advised as to accident hazards; through which procedure is prescribed for education as to unsafe practices; and through which rules and regulations are enforced.

3. Education, through which rank and file employees are instructed as to occupational hazards and the safe methods of performing their everyday work.

4. Engineering, through which the structural and mechanical conditions are made safe, *i.e.*, the material conditions under which work is done are put in safe physical condition and are so maintained.

5. Statistics, through which the specific problems requiring solution are indicated and by which the progress of accident prevention efforts is gaged.

Organization. The organization for safety work necessarily varies and depends largely on the industry, the relationship of individual companies within an industry with respect to problems of mutual concern, and the size of any given company.

Accident prevention work largely concerns the individual, his state of mind, his understanding of occupational hazards and his disposition to comply with, or disregard, rules and regulations for safety as promulgated. Safety work, therefore, requires an organization within the company on a basis that will insure full observation of employees in their everyday work and the dissemination of safety propaganda through every possible medium. The employment of a safety engineer and the organization of committees, including a central safety committee, and supervisors' or workmen's safety committees, are considered as essential to a well-organized, practical safety effort.

The duties of the *safety engineer* may be summarized as follows: to have general supervision of the safety work in all departments; make frequent inspections of physical operations; counsel with local committees; see that approved recommendations are carried out; investigate accidents; fix responsibility for accidents and make recommendations to prevent the possible recurrence of similar accidents; keep statistics of accident and labor data and make therefrom monthly and special reports to heads of departments and

other officials; supervise and conduct the educational work through safety committees.

The number of committees and their use will in part depend on the size of the organization.

The central safety committee may be composed of the manager or general superintendent as chairman and four or five other men occupying responsible positions.

This committee should meet once a month and have general supervision over all accident prevention work. Specifically, the committee should give consideration to and act upon safety work as follows:

1. Direct the expenditure of all funds appropriated for safety and sanitation.
2. Establish standards or indicate standards to be followed for all mechanical guarding and construction work.
3. Review reports and recommendations of safety specialists, and foremen's or workmen's safety committees.
4. Supervise safety inspection work.
5. Outline educational methods and direct safety campaigns.
6. Prepare statistics of accident experience divided as to cause of accidents, accident frequency and severity rates, cost, etc.

Local or departmental safety committees may be composed of workmen or workmen and supervisors jointly. Rotation of membership by periodic changes in personnel may be provided for. These committees should meet regularly once or twice each month. Their duties should include:

1. A review of accidents occurring since the last meeting and fixing of specific responsibility.
2. Inspection of department and recommendations to eliminate unsafe conditions or practices.
3. Consideration of the report of each committeeman on his personal activity in safety work.
4. Investigation of and report on all serious accidents immediately after occurrence.
5. Cooperation in the preparation of safety rules and regulations.

Supervision. Experience has indicated that success in accident prevention work is attained in proportion to the degree to which supervisors recognize that safety work is, in its final analysis, an operating problem and as such, demands their interest and wholehearted cooperation. Supervisors should therefore be held strictly responsible for the accidents to men under their supervision.

Supervisors should be constantly on the alert to note unsafe conditions and practices and to have them corrected; to investigate fully and report on accidents to their men; to instruct employees as to occupational hazards; and to enforce rules and regulations as published. To this end frequent meetings of supervisors should be held to discuss the problems and assist in developing preventive measures.

Education. The experience of industrial plants in accident prevention work has clearly indicated the necessity of inculcating habits of caution in

rank and file employees. Educational activities generally carried on under the direction of the safety engineer are:

1. Installation and maintenance of safety bulletin boards.
2. Safety meetings of employees at convenient recess periods or on paid time.
3. Intersectional and interdepartmental safety contests.
4. Formulation of safety rules and regulations and distribution to employees as rule books.
5. Arrangement for safety meetings of superintendents and the foremen.

It is generally agreed that the basic problem of accident prevention is to change the naturally careless attitude of persons to a careful one. This result can be best attained by persistent education.

Engineering. It is essential that all drawings or blueprints before leaving the drafting room be checked for safety against the safety codes or standards adopted for the company. Space should be provided in the title of the drawings for the initials of the person checking this item. Specifications for the purchase of all equipment should include a clause to the effect that gears, chains and sprockets, and other dangerous moving parts should be effectively guarded.

The safe practice leaflets of the National Safety Council may be used as a guide in developing standards best suited to the individual requirements of the company. If the organization is a large one with scattered plants it would be well to have the chairmen of the plant central safety committees meet quarterly or semiannually as a standards committee, for the purpose of developing company standards and practice.

Statistics. A uniform system of collecting and tabulating accident statistics is indispensable to a proper understanding of the accident problem and the effective prosecution of safety work. Such a system includes accident record books covering all details of the accident, the supervisor's report on individual accidents, and periodic reports showing accident frequency and severity rates, cause classification, and cost.

Plant Accident Record Book. At each plant of the company basic accident data should be entered by principal departments in an accident record book with columns for the personal history of the injured employee; details of the accident as to time, place, cause, nature of injury, and other circumstances; number of days lost; accident costs divided into compensation payments, surgical expense, etc. A suggested form incorporating the above essential data is given (see Fig. 1).

Report of Accident. As soon as a foreman is notified of an accident, he should investigate, make a report, and send it through regular channels to the department head, a copy being sent at once to the safety engineer.

Report of Accident Frequency and Severity Rates. From the basic data entered in the accident record book, a monthly tabulation should be prepared giving departmental accident frequency and severity rates. The accident frequency rate should be expressed as the number of lost-time accidents per 1,000,000 hours worked. The accident severity rate should be expressed as the number of days lost per 1,000 hours worked.

THE _____ COMPANY
ACCIDENT RECORD
_____ PLANT

[illegible]

Fig. 1.

A similar annual report should be prepared and be supplemented with a tabulation giving accident costs by departments, by plants, and for the company as a whole, dividing the costs into compensation payments and surgical expense.

Cause Classification. The classification of accidents by cause is of utmost importance as it directs attention to plant conditions or practices which require correction. Such a general tabulation should be prepared at least once a year, and more frequently in the case of special hazards.

UNEMPLOYMENT BENEFIT AND EMPLOYMENT GUARANTEE PLANS¹

BY BRYCE M. STEWART, *Industrial Relations Counselors, Inc.*

Only comparatively recently has it been recognized that unemployment is not chiefly due to personal causes but is related to the disorganized state of the labor market and the irregularity of business operation. Cyclical fluctuations are thought to constitute the principal obstacles to the maintenance of prosperity and, with changes in industrial methods and organization, comprise the principal causes of unemployment. This suggests that the chief point of attack is the cycle but also encourages the development of statistics of unemployment, of public works, vocational guidance, and public employment offices by state and national governments. Individual employers are urged to conduct their business in such a way as to minimize seasonal irregularity and the effect of the business cycle. But it is clear that no amount of effort along any or all of these lines will entirely do away with unemployment. Compulsory unemployment insurance has been adopted by many European governments to deal with the problem as an expected occurrence rather than as an emergency.

In the United States certain unions and employers, both separately and jointly, have undertaken to be responsible for the unemployed in their organizations under formal plans. Development of voluntary unemployment benefit plans in the United States has, however, been so meager and experience for the most part so brief, that it is impossible to lay down any general rules for instituting and maintaining such schemes. The thirteen benefit plans operated by companies alone prior to 1930, and the twenty-four plans operated by joint agreement between companies and trade unions, as well as the more numerous union plans, do, however, suggest certain considerations which must be kept in mind by anyone devising a formal plan for the payment of unemployment benefits or for the guarantee of employment.

1. In planning the structure of the benefit schemes, choice has thus far been made between *the guarantee of employment and the benefit types*, considering as guarantee plans only those that guarantee full wages for the period specified. The benefit type is the more prevalent. It is less in the nature

¹ This section is taken from B. M. Stewart, "Unemployment Benefits in the United States," Chap. VIII in collaboration with M. L. Stecker, J. C. Barber, and M. B. Gilson, Industrial Relations Counselors, Inc., 1930.

of a promise of full-time employment, something beyond the power of any management, amid the breaking down of trades by inventions and the shifting conditions of modern industry. There is a record of one company in which there has been a change from the guarantee to the benefit form, but so far as is known there has never been a change in the opposite direction.

2. If it is proposed to give *protection against all risks of unemployment*—seasonal, cyclical, and emergency—ideal procedure requires that the extent of each be separately calculated and that the funds collected for compensation of unemployment be established so as to take all three into account. If this is not done, any monies accumulated while only seasonal slackness is being experienced, for example, may come to be regarded as surplus and the reduction in contributions or increase in benefits which may result in the end will mean that when the other risks require benefit payments the money to meet this need will not be available. No calculation of the risks of unemployment is adequate which does not cover the complete cycle and is certain to be erroneous otherwise unless adjustments are made which take into account the position of the cycle when the plan is started.

3. In setting up a plan of unemployment benefits, consideration should be given to the *establishment of a dismissal wage* as an integral part of the scheme, a type of provision adopted by a number of prominent firms including some with unemployment benefit plans. A dismissal wage would serve to deter the management from increasing the force unnecessarily; the employee released would be aided during his search for other employment or an old worker might be tided over the period until he could claim a pension, he would be compensated in some degree for reduced wages on a new job. In any such scheme of compensating unemployment due to permanent release, the question should be considered whether or not an employee who has exhausted his right to benefit for other kinds of unemployment should be able to resign and receive his dismissal wage.

4. For measuring the different risks of unemployment and for the direction of preventive effort, *statistical records* are obviously necessary. The data of chief importance for this purpose are the total man hours of employment in each pay period and the hours of voluntary absence without pay. The difference between the sum of these two and the total full-time man hours in the pay period will give the man hours of unemployment. If collected for a sufficiently long period these data will indicate not only the average annual periods of seasonal unemployment, but will have covered cyclical and emergency unemployment as well and will permit the best possible estimate of the financial provision necessary.

At the beginning of the operation of a plan, in most cases, estimates must be substituted for statistical experience and it is necessary to take care to make them conservative, looking to their revision as experience indicates. A majority of existing benefit plans underestimated their unemployment hazard.

5. Whether there is a true actuarial basis for an unemployment benefit plan or not, the probable amount of the *monies that will be available* for financing the scheme must be determined. It is important that the financing be related to a definite and fairly constant base such as the pay roll, rather than to a more uncertain quantity such as profits. If a percentage of the

pay roll is to be set aside, the amount of the annual disbursement of wages averaged over the entire business cycle is the best indication of the basic sum upon which contributions should be assessed, and the percentage will be fixed to yield the amount set. The scale and duration of benefit and conditions under which it will be paid will then be adjusted to hold the demands upon the funds within the predetermined totals. Establishing a maximum annual benefit allowed any employee will afford an additional safeguard to the solvency of the funds.

6. Whether or not the *employees are to contribute* must be considered. While the trend in the plans set up by joint agreement seems to be toward placing the entire burden upon the employers, the decision ultimately rests on such considerations as the amount required to give adequate protection; the financial ability of the management to make the whole provision and certain factors of managerial policy; the employees' ability to pay, their attitude toward participation and the extent of their control of the market; and the relative effects of contribution or non-contribution on malingering.

7. When, as in most cases, the funds available at the outset permit a very *limited degree of protection*, the choice inevitably arises between attempting to cover all unemployment in a small way or of eliminating certain forms of unemployment and paying higher benefits for the others. Short time, or time lost through shut-downs or permanent release may be excluded from benefit, for instance. This device is open to the objection that unless the nature of the business makes it impracticable, the management to a certain extent has the power of forcing the unemployment into a non-compensatable form, while the employees are likely on their part to insist that they be permitted to take their lost time in a form that is compensated under the plan.

8. *Further limitation of protection* may result through the fixing of conservative length-of-service requirements and waiting periods for participation. While these are necessary administrative devices, their use for the purpose of cost control may be questioned on the basis that it is generally better to defer the payment of benefit until a sufficient fund has been accumulated to permit liberal provision than to hedge the scheme about with regulations that confuse the employees and restrict the protection so materially that their interest and confidence are not secured.

9. Another question relates to whether the *benefits shall be a flat sum equal for all employees or a percentage* of each employee's full-time earnings. If the employees contribute in proportion to earnings, the flat-sum method introduces discrimination, in that, on the principle of need, higher benefits per dollar of contribution are granted to the lower wage groups than to the better paid employees. If the management bears the whole expense and provides flat-sum benefits, the principle of need is still recognized. While those in the higher wage groups might adopt the attitude of some under the union plans, that the benefit is a dole to be given only those in distress, it is possible that the higher wage groups might consider themselves unfairly treated in that they would be receiving less in proportion to the market value of their services than those on lower wage rates. They might even adopt the view that the management would do better to abandon the plan entirely and pay the benefit as wages. It is noteworthy that the largest existing joint plan, and all but

one of the company plans, have adopted the principle of paying benefit in proportion to the loss in wages.

10. When a joint or company plan covers more than one establishment of sufficient size to permit a *separate fund* for each, a decision is necessary as to whether company funds shall be set up or whether the contributions on account of *all the units shall be pooled*. In the limited experience of one of the large joint plans which pooled all contributions, the bulk of the disbursement for benefits went to workers in shops that had afforded only a small volume of employment, while the employees of shops where work was more plentiful who, on a percentage of pay roll basis, had contributed most to the fund, received much less. The inequity of this situation was accentuated by the fact that the plan excluded from compensation a considerable period of seasonal unemployment, and as the seasonal slackness of some of the firms with more regular employment at times did not exceed this uncompensated period, their employees received no benefits at all. In so far as the greatest irregularity of employment was confined to identical firms season after season either because of their inefficient management or concentration of production on lines of greatest seasonality, the same shop groups of employees continued to receive the lion's share of the benefits and, conversely, the employees of units with more regular work continued to participate only in a small way or received no benefits at all. Moreover, under this procedure the necessary "squeezing-out" of employees from marginal firms and the absorption of the latter's business by more efficient managements was retarded, and the incentive to regularization of employment was weakened.

11. Confidence and goodwill are indispensable for the success of any benefit scheme. To secure these in full measure requires that the *funds shall be segregated* from the monies of the business or organization and vested in trustees with power to use them only for the purposes indicated, for their investment in conservative securities and with instructions for their equitable distribution if the plan should be terminated.

12. Unemployment benefits are likely to prove costly. The probable high costs make it especially important that the plan should be placed on an actuarial basis as soon as possible, but that leaves the scheme in danger at the outset. To provide against this, payment of benefits should not be commenced until a *substantial reserve* has been accumulated and initiation of benefit outlay should be timed with the uptrend of the business cycle so far as careful planning will permit. The limited voluntary experience with unemployment benefit plans in the United States and the large governmental systems in Europe record many instances of forced deliberalization of the terms through encountering a depression before a sufficient reserve had been built up. A long period of accumulation at the outset is more feasible, of course, when the employees do not contribute and hence are not in a position to demand immediate benefit. As said earlier, the scale and duration of benefit and the maximum annual amount of benefit allowed should be determined on a conservative basis and, if possible, their actual terms should not be announced until the end of the initial period agreed upon for the accumulation of funds, so that they may be fixed in the light of the experience of the period.

13. Integration of the unemployment benefit plan with a scheme of *employment regularization* and a broad industrial relations program should make possible a minimum of unemployment benefit expenditures. Some farsighted firms have attempted to regularize their employment before adopting unemployment compensation. If training is provided and encouragement given to employees to become efficient on more than one operation so that surplus workers in one department may be transferred to expanding sections, and if there is an employment department with complete knowledge of the entire labor demand and supply of the business, with facilities for transfer between plants of the organization in the same and other localities, much in the way of stabilization may be accomplished.

14. It is probable that some state governments will experiment with schemes of *compulsory unemployment insurance*, and promoters of industrial plans should have regard to this consideration in formulating their schemes.

Appendix

At the end of 1929 there were eleven unemployment benefit plans operated by companies, twenty-two under the joint control of unions and employers, thirty-seven instituted by local unions, and four covering entire union jurisdictions. The structure of the plans showed considerable diversity as between the three groups and also within each group. Five sets of provisions made up the structural scheme: eligibility requirements, definition of unemployment, source of income, scale and conditions of benefit, and administrative regulations. The variety in the provisions and their application resulted from the different needs and conditions of the organizations and industries covered and the different factors affecting the adoption and development of the schemes.

All three groups of plans have required a probationary period of membership in the union or service with the company for a workman to qualify for participation. While unemployment was generally defined as involuntary idleness due to lack of work, most of the plans provided that such unemployment in certain of its phases shall not be covered. Income was derived solely from the members in the union plans, from the employers and employees or from the employers alone in the joint schemes, while the company systems were financed entirely by the managements. The benefit provisions indicated the scale and duration of benefit, the waiting period before unemployment was regarded as compensatable, any other period for which benefits would not be paid, and usually the maximum amount that any worker might receive in the year.

During the depression of 1930 and 1931 three more company plans became operative and each incorporated original and interesting features. The principle of employee contributions, heretofore limited to certain joint agreement plans, was introduced in one of the schemes which covered the employees in all branches of a large corporation. The fund accumulated for six months before payments began. The second plan applied to the workers of five small firms in a Middle Western town and provided for shifting employees from company to company, with benefits paid from the individual company funds.

The latest of the schemes to be announced carried this cooperative policy even further. Fourteen companies employing about one-half the wage earners of an eastern industrial city, each agreed to put into effect a plan for

the payment of unemployment benefits. Reserves were to be built up by the individual companies during 1931 and 1932, and benefits to begin in 1933. Contributions may be required from employees at any time that payments become so heavy as to endanger the solvency of the funds, but in this event company contributions will be correspondingly increased. Each employee who is laid off must register at the city central employment bureau which these companies were instrumental in establishing, and to which they report all vacancies.

PSYCHOLOGICAL FACTORS OF OBSOLESCENCE OF WORKERS IN MIDDLE AGE

BY ELLIOTT DUNLAP SMITH, *Professor of Industrial Engineering, Yale University*

The advance of medical science is making the expectancy of life of the worker longer and longer. The advance of engineering and managerial science, however, seems in some quarters at least, to be making his expectancy of working life shorter and shorter. The fact that the advance of engineering service has simultaneously brought about the transfer of much of the heavy physical work from the worker to the machine, pointedly suggests that such difficulty as there is, is psychological, not physiological—that modern industry is making increased psychological demands which the worker after middle age is no longer able to meet.

Effect of Advancing Years. There is no question that psychologically, as well as physiologically, advancing age does ultimately bring about deterioration. The decline of physical strength and vigor in old age in itself impedes the power of mental application. In addition, the senses and even the thinking processes ultimately become directly impaired. Eyesight and hearing fail, memory wanes, and often even the reason loses its brilliancy and power. Above all, learning power seems to fail, for the old adage that "you can't teach your grandmother to suck eggs" can, in old age, be justified as fully upon the incapacity of the grandmother to learn as of the grandchild to teach her what she does not know. Such changes, however, are rarely extensive until ripe old age. Yet today the problem of superannuation that is attracting most attention is superannuation shortly after middle age, when until recently, a man was supposed to be at the height of his mental powers. It is possible, however, that coming declines cast their shadows before; and there is in middle age a less conspicuous loss of mental power, which while unobserved and immaterial in the looser industrial conditions of the preceding generation, is of serious consequence in meeting the more exacting industrial demands of today.

Psychological studies of the effect of advancing years unfortunately have been few. Moreover, much of the experimentation has been haphazard, and is rendered unreliable because of the difficulty of separating the effect of age from that of other influences. Adult human beings are especially difficult to study. On the one hand, the normal environment of adults is so complex in our modern civilization that it is all but impossible to segregate the influence

of individual forces. On the other hand, it is almost impossible to carry on with adult persons, for any considerable period of time, experiments in which the entire environment is artificially so controlled as to confine its influence to determinable factors. Still, some careful psychological studies have been made and these almost uniformly indicate that the body feels the weight of years before the mind and that the mental changes brought about in adults by the mere process of advancing age—at least until they are well on in truly old age—are few and insignificant.

The most careful work I know is that of Hollingworth and of Thorndike.¹ Thorndike, in 1928, in addition to reporting his own studies, carefully reviewed all previous experiments. Both men agree that age causes a very slight decline in the sensory equipment, which may start even in the early thirties. They also agree that while there is no appreciable decline in intelligence, there is evidence of some slight impairment of other mental processes such as memory and learning power. The average adult, according to Thorndike, reaches the peak in *measurable* learning power at twenty-five years of age, and by forty-five has suffered a decline of appreciable consequence.² Both agree, however, that such loss as they can discover in measurable learning capacity is not the result of the mere passage of years, but is almost wholly due to extraneous factors.

Importance of Factors Other Than Age. Among the factors other than age which tend to bring about a decline in learning power in the average adult as he grows older are two of outstanding importance: the atrophy of acquired learning habits consequent upon disuse, and the amount of unlearning involved in new learning after old and inconsistent habits have become well set. The effect of these forces is illustrated by Thorndike's studies of the influence of age upon the learning power in middle age of convicts and of college men. Compared to convicts, college men decline more in learning power as they grow older, and yet their greatest decline in learning power is in fields in which they have never done any studying in college. Apparently, since the students do more learning throughout youth than convicts, by twenty-five their inherent learning ability is more amplified by habits. In later years when these habits of skilful learning fall into disuse and atrophy the college man suffers a relatively greater decline in learning ability than the convict. On the other hand, when the college man undertakes, in middle age, to learn in an entirely new field, the difficulty of overcoming then the mass of inconsistent habits which he had established in college by extensive exercise in learning along other lines, is greater than the difficulty of reawakening and utilizing learning habits impaired by disuse.³

In every instance such decline in learning power as is at all reliably established seems to be due primarily to influences other than merely growing

¹ See HOLLINGWORTH, H. L., "Mental Growth & Decline," Appleton, 1927.

THORNDIKE, E. L., and others, "Adult Learning," The Macmillan Company, 1928.

² Such learning power as can be measured is of necessity confined to limited and generally fragmentary types of learning and to artificial conditions of measurement. This renders any report of mere measurement of learning power an incomplete record.

³ This explanation is mine. Thorndike makes no explanation of the fact that students decline most in learning power in fields in which they have done no previous studying.

old. The testimony of such psychological evidence as we have is, as Thorndike says, that while there is some observable decline, "the decline is not only small in amount: it is also probably in part avoidable by the simple expedient of continuing to learn," and that until true senility, "if other factors are equalized, the influence of age upon learning ability approaches zero." Judging from these psychological studies, the major psychological problems of increasing years are not due to mental deterioration—but to obsolescence. For there is nothing inherent in middle age that renders workers psychologically unfit—if they cannot be successfully used in industry it must be that their acquired mental equipment is inadequate and out of date and that the task of replacement is beyond their powers.

The fact that it is generally believed that middle aged people usually learn less than younger people is not inconsistent with these psychological findings. In the first place, as every teacher knows, the amount a person actually learns is not a measure of how much he is capable of learning. In middle age there is less that it is necessary to learn, for middle aged people have in earlier years learned enough to meet their social demands and to earn their living in established ways. Their days are well filled doing things they long ago learned to do. To start out into some new field without guidance is baffling to an adult just as it is to a youth. To go further in a field where one has already gone far, brings one sharply up against the law of diminishing returns. Each additional increment of learning is harder won as one gets further and further from the simple underlying generalities. Each additional increment seems smaller and less worth the effort in proportion to the learning already done. And usually, because of the constantly increasing magnitude, subtlety, and confusing interpenetration of principles that occur as one goes further from the elementary outline of a subject, each additional increment of learning requires a greater degree of intelligence to master. Hence, the general observation that people learn less in middle age, while probably an accurate observation of how much they learn, is not indicative of any decline in learning ability.

The Testimony of Experience. The testimony of practical experience, moreover, confirms the evidence of psychological experiment, that such changes as occur in middle age are the result of experience and not changes inherent in becoming older. People who have been constantly engaged in creative work lose little originality with the passing years. Witness the number of men, from John Dewey to Alfred Whitehead, who do creative writing of the highest order long after they have passed middle age. Witness also the continued inventive genius of such men as Edison and Steinmetz. Nor is this true only of great men. For example, the most creative work room supervisor I have ever had—a man who evolved new ideas and methods constantly—was well past sixty; while in one of the most progressive New England companies the head of the new goods department is a man over seventy.

It is capacity to perform more than capacity to create, however, that is vital to the average employee in industry. Here also the evidence of practical experience parallels that from the psychological laboratory. In practically all trades and professions, where the fundamental requirements have remained

the same and the process of learning and of developing ability through practice have therefore been continuous, workers rarely reach their peak until the thirties, and continue to command their highest wages or salaries throughout middle age. This is true of tradesmen such as machinists, carpenters, guillotine cutters, or jewelry case makers, as well as executives and engineers. It is even true to an astonishing extent on jobs where because of the simplicity of the operation, the value of accumulated skill and trade knowledge is apparently small. In my own observation, for example, even on so simple a process as the hand shear or the foot punch, where the worker merely brings down a shear knife or punch head upon a piece of paper registered against a gage, workers with fifteen to fifty years of service generally outdistance their younger coworkers. For where learning is continuous, even when thorough mastery can be early attained, the acquisition of trade knowledge and the formation and improvement of more and more effective habits of skill usually more than compensate for any possible loss in nimbleness or inherent learning capacity.

Human Nature Adjusts to Gradual Continuous Change. It is by no means necessary that the job continue unchanged year after year for the employee to increase in skill as he grows older. Even in the face of striking developments, provided they are accomplished without sudden spurts, the power of habit to improve what is done repeatedly, continues to bring its return. For under the guidance of constantly progressive management the skill which is thus evolved can be molded as it develops so as to conform to improved conditions, methods, and standards. Human nature can adjust to great changes provided the process of change is gradual. Certainly, few jobs have changed more under the constant criticism and stimulation of scientific management than those of the salesman and the executive. Yet in those concerns where the development has been continuous and the salesman or executive continuously exposed to the process of development, middle-aged people still hold the principal positions. Similarly, in factories which have made outstanding but continuous developments in manual or clerical methods, middle aged employees hold their own.

The situation is entirely different however, when, because development of methods is sporadic and involves abrupt changes, the employee is faced with the problem of making fundamental changes in a brief time. The difficulty of learning is always greatly multiplied when learning can not proceed one step at a time, but must cover in a single leap what should have been covered in many steps. Moreover, except in some such industry as the automobile industry, where the newness of the product offers an unworked opportunity for engineering and managerial development, abrupt revolutionary changes usually occur only after a period of stagnation. It is in backward industries or companies, just as in backward countries, that revolutions take place. For during a long period of stagnation, neglected opportunities for progress accumulate and make drastic change possible, and indeed, necessary if the concern is to survive. Concerns that are constantly and scientifically striving to seize every opportunity for development, discover their opportunities in such early stages that changes which would have been drastic if delayed, are gradually brought about in small increments.

Serious Effects from Stagnation. The psychological effect of stagnation upon the employee, followed by drastic change, is doubly hard. During a period of stagnation, because no job learning is done, the habits involved in job learning just as with student learning gradually weaken. Learning becomes an unaccustomed and baffling effort. At the same time the obsolete working habits become strongly entrenched. If habitual methods are repeated without change year after year, they acquire a strong hold. The mind, and even the body, adapts itself to such repeated activity. For instance, I have even seen the hand of a case nailer, who year after year held his nails in exactly the same way eight hours a day, become so bound in this position by muscular and skin growths that it took a serious operation to enable his hand to be opened out to a normal position, and even then it could not be restored to normal usefulness. And so with mental growth; with exact repetition, habits become set, and even those which are superficial in substance become strongly ingrained into the person. Thus, for example, mannerisms become indelibly set if allowed to continue unaltered, and similarly "mannerisms of thought" and, even more, the fundamental articulations which underlie working skill, get an unconscious but tenacious hold.

Unchanged habits, moreover, not only grow strong with exercise, but as they grow strong cease to require conscious control, and then gradually withdraw from consciousness altogether. For this reason a skilled worker is often a poor teacher. He does not know, and in fact often cannot discover, just what are the particular motions and acts in which his skill resides. The habits which control the subtle articulations which underlie skill, because they are deep set and fundamental, retire particularly far beyond the reach of conscious attention. All this makes sudden unlearning additionally difficult. It is hard enough to unlearn processes of which we are conscious, but to seek to discover and uproot subtle habits long since hidden from conscious thought is to face multiplied difficulty. Anyone who has long followed one practice in his favorite sport and then shifts to another can understand this from his own experience. If a man who has swum breast stroke undertakes to swim the crawl he finds the task all but impossible. He doesn't seem built for it. Ways of working his muscles and timing his motions that he can no longer bring into consciousness are inconsistent with the new stroke. Superficial conformity is easy, but to make those fundamental but subtle articulations which make the stroke effective is an all but hopeless task.

Similarly, when a period of stagnation is followed by rapid change—the long-service worker is both confronted with a task of rapid learning and a far more difficult task of unlearning. But, unfortunately, this is not all. The thinking of the employee about his work has been subject to the same stagnating influences as his work itself. He has been so used to thinking about it as the right way, that he has grown to accept its rightness as axiomatic. He no longer sees possibilities for improvement, or entertains ideas which suggest that better ways exist. Hence, change following a period of stagnation is not only difficult, but to the employee it seems both unwise and unnecessary. Faced with these handicaps the middle-aged, or rather the long-service worker, is unable to adjust.

For example, the most valued workers in a department of about 140 jewelry box makers and liners, with which I was long in contact, were a group of about thirty employees who had been with the company over a quarter of a century. The quality of their work was one of the company's cherished assets, and their earnings on piece rates were the highest in the department. Not only this, but the work they did was of such a difficult nature, and the difference between their proficiency and that of a new worker, especially during the first year, was so discouragingly great that few young people were willing to stay long enough to become proficient. A few years later, however, the department, which had followed the same methods for decades, was thoroughly reorganized and striking changes in product and method rapidly introduced, including the substitution of highly subdivided methods of mass production for the former craftsmanship method under which a single employee made a complete box. As a result, these same employees became one of the department's most serious problems because of their inability, after years of gaining remarkable proficiency in antiquated methods, to adapt themselves to products and processes of a fundamentally different sort.

This inability to adjust to sudden change following a long period without change is as true of managerial as of manual or clerical employees. Again and again, where departments or factories have been allowed to stagnate, I have known even fairly youthful executives to be unable to adapt themselves to the reorganization that followed. In the face of such conditions, the only advantage of the younger executive or employee is that his learning capacity has been more recently exercised and that he has less to unlearn.

When one sees, as I have seen, an executive of thirty-five who has been more than twenty-one years in one department that was still operating "in the good old way," come up against the problem of adapting himself to a reorganization, one can clearly visualize the process by which mental obsolescence occurs. The individual has been brought by his work into a condition of conformity to antiquated and largely unconscious methods of thought and action so deeply set as vigorously to resist change. He has been afforded by his work so little necessity or opportunity of change or development that he has forgotten how to learn. Then the methods which he has learned too well have been suddenly discarded and he is faced with the necessity of promptly losing the grip of the old and acquiring the new. The fact that he is unable to do so is not due to his age but to the fact that for year after year he has been forced to remain in a rut.

Effects of Age on Personality. An individual's value in industry and his willingness, if not his ability to learn, of course, are affected by his temperament as well as his intellectual qualities, which, like the factors of intellectual ability, are commonly believed to change with age. In general, people past middle age compared to people in their twenties are thought to have among other personality differences, less enthusiasm and willingness to expend energy lavishly, but more patience and persistence; less willingness to take risks or make changes, but more poise and stability. But just how far this is an inherent result of age, or even how far these changes occur at all is a difficult problem to determine. Personality qualities are so intangible that they have not yet been reduced to sufficiently determinable values to

permit accurate experimental measurement. Moreover, in such a subtle field general observation is especially unreliable and likely to be colored by the circumstances, background, and point of view of the observer. Thus the opinion of executives as to the effect of middle age on the personality varies widely, largely depending upon what their personal experience with younger and older workers has been, and sometimes apparently upon the age group in which they find themselves. Executives are even more divided on the value of the changes middle age brings than upon what these changes are. For so much of the value of personality qualities depend on the situation in which the person finds himself, and even more upon his possessing personality characteristics which interweave with each other and with his intellectual qualities to make a well-balanced whole. Poise, for example, may become a limiting emotional inertness if united with other conservative factors, while willingness to take risks, as has recently been amply demonstrated, can cause untold losses unless united with a proportionate capacity to take risks wisely and applied in a situation in which risk taking is a desirable practice.

The same influences of habit that modify learning ability moreover affect personality. For example, if a person has been sheltered by his work and life from change, he will become increasingly cautious and timid, while, if he has been constantly exposed to risk he is likely to exemplify the maxim "the older the bolder." Besides the effect of his work and life upon his personality is likely to be collateral to their effect upon his intellectual equipment. Thus, if he has made constant progress throughout life, his long practice in the hard work of developing new skill will increase not only his habits of skillful learning, but also his patience and perseverance in learning, and his attitude toward new measures. If, by experience in making decisions and observing consequences, he develops the habits which underlie penetrating judgment, and accumulates a wide background of experience on which sound judgment can be based, this will give value to such perseverance as well as to such willingness to take risks as he may have. If on the contrary he has worked long on a single job, he will not fully develop the conservative sides of his personality but his conservatism will be reinforced by the exceptional difficulties of unlearning as well as learning, and by the intellectual bias that will make change seem unwise. Moreover, his long investment of skill in a single type of performance will, as a matter of fact, make his loss serious if he scraps or is forced to scrap all his accumulated trade knowledge and ability in one direction to start up from the bottom in another. Because of the effects upon his mind and character of his past experience his desire to avoid change is not without practical foundation.

Source of Difficulty within Industry Not in Human Nature. Thus the problem of the inability of middle aged people to meet the demands of present-day industry is not primarily due to the psychological effects of advancing years. Practical experience confirms the results of the psychological laboratory that the principal effect of the passing years is that they provide inescapable exposure to the influences of what a man does and experiences as the years pass. The power of man to continue to acquire and to develop habits gives to increasing years the opportunity to offset any slight decline in faculties or change in temperament which might occur, by increasing skill, information,

seasoned judgment, and personality qualities adapted to the requirements of his circumstances. But the same power also gives to the passing years the opportunity for learning powers to fall into disuse and atrophy, for undesirable habits of thought, action and personality to form, harden and to escape from conscious control or even conscious recognition, and for the crystallized habit structure to become fortified in bias and complacency. Psychologically, what the advancing years do to the worker or executive is thus essentially dependent upon what he does with the years. As to those qualities of intellect, feeling, and character which can be exercised and developed in leisure—they are primarily within his own control.¹ But under the exacting job control of modern management, junior executives as well as manual and clerical employees must largely depend upon the higher management for determining whether their jobs render the passing years' steps toward development or obsolescence. Of course, the individual can and must do much; but the more highly industry is organized, and the more standardized the work of the individual, the less can he influence the nature of his job, and the more the nature of his job determines his qualifications as a worker in middle age.

Human nature is thus psychologically equipped to meet the fundamental requirements of modern industry and scientific management throughout middle age as well as youth. Within an individual plant the difficulty arises when scientific management is not applied scientifically, but in a haphazard way; when spasms of change follow in the wake of managerial stagnation or failure. Even a motor car or a horse rebels against jerky driving. If the application of scientific management is to avoid middle age obsolescence, it must be consistently as well as effectively applied. Unfortunately the external problem is more baffling. Under modern manufacturing conditions, even when continuous development is made, the work in one industry is highly specialized compared to that in another. Even individual companies have highly characteristic practices and methods. In proportion as service is long the habits of the employees in regard to fundamental company and industry responses become set. Change to another company and especially to another industry involves not only beginning again but an immense amount of unlearning. Moreover standards of living have become firmly established by middle age, and make the long process of working up again from the starting wage a bitter experience. And yet, with changing market demands in many industries and more rapid increase in productivity than in market demand in others, such inter-industrial re-distribution of employees seems inescapable, and such re-distribution middle age is ill-adapted to meet. Consequently care should be taken that so far as possible this distribution is confined to the younger workers.

Human Nature Plastic. Human material is remarkably plastic, but it cannot be held for years in one mold until it is thoroughly hardened, and then be forced abruptly into another. In general, when men become psychologically obsolete in middle age it is not a sign that they can no longer conform

¹ With the worker much, of course, also depends upon the provision by the community of facilities and leadership to assist him in rendering adult recreation a force for adult education.

to the demands of modern industry or to the progress of engineering development, but either that the mistakes and irregularities of management have required them to assume excessive psychological burdens or that their obsolescence is a consequence of the rapid changes in distribution of labor involved in the present readjustment of production and consumption.

THE EMPLOYMENT AND ADJUSTMENT OF THE OLDER WORKER

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Every day the personnel man or woman must face questions concerning the employment and adjustment of people, their compensation, their conditions of work, their training, their advancement and their records—and must look at these questions not only from the employee's point of view, but from the management's point of view.

But no problem in the personnel field has proved more difficult than that of the older worker. It is becoming increasingly difficult to find a new place for a person past youth—either by transfer in his own company or in another company. By "older" we do not mean elderly people, but those of middle age—say past forty.

Seventy-five companies, nearly all members of the American Management Association, were questioned on this subject. They are located in the Middle West, in the South, in New England, and here in the East—eleven states being represented.

They are representative organizations: public utilities, such as gas and electric companies and telephone and telegraph companies; department stores; street railways; life insurance; petroleum; bond houses; and manufacturing, including textiles, paper goods, rubber goods, metals, stoves, chemicals, paints and enamels, gun powder, electric supplies, and sewing machines. It will be seen that the information gathered came from a pretty wide field.

A list of questions was sent to the selected companies, covering the difficulties encountered in connection with older people, and the methods used to meet these difficulties, and asking for opinions and suggestions on the subject. Replies were received from sixty-four companies. These replies indicated an active interest in the problem of the older worker.

The Chief Causes of the Problem. This problem of the older person in business and industry has various aspects. It must be viewed from the employer's point of view because he has his own problems in connection with it. Then the older employee (the man still inside) faces it from a different angle. And the older applicant has his own difficulties when he is trying to get into a large organization from the outside. We shall probably speak of employees and applicants as though they formed one group, because the line between them is, after all, a very narrow one; the moment an older employee loses his position, he becomes an applicant to another department if not another company.

There are various reasons for the situation, but evidently the chief causes are as follows:

Age Limits. First, the age limits. These are of two kinds—there are the fixed age limits set by a limited number of companies, which exclude people over forty or fifty or fifty-five years of age. Only nine of the companies answering have definite, written rules as to age at the time of employment.

The large majority of companies do not have formally established age limits, but do have a tacit understanding that the employment office should not take on older men and women. However, in practice the age limit works out much lower than these established limits—due chiefly to the policy of employing young people and training them up in the business.

There were twelve times as many answers admitting that in practice the hiring age is much below the established age limit, as those taking the opposite view.

Policy of Promotion from Within. As has already become evident from the above, the age limit is also brought about by other factors than the arbitrary rule set by a company, and the exclusion of mature people is frequently automatic—not intentional. One strong factor is the policy of *promotion from within* which is followed consistently by practically all large companies. Under this policy about the only openings for people from the outside of the company are those at the bottom of the ladder and about the only advanced openings for outside people are for those with very special kinds of experience.

Pension Plans. The pension plans of most of the large companies also help fix the age of employment. These plans usually require a certain length of service before pension, usually from fifteen to twenty-five years, although a very few companies only require ten years. As the retirement age is generally set at from fifty-five to sixty-five years, a new employee must be under forty or forty-five years in order that the company may obtain the requisite number of years of service before pensioning.

Yet while this factor undoubtedly does affect the age limits for employment, an analysis of the replies on the point reveals that the number of companies which do not have pension plans is nearly twice the number having such plans.

Reorganizations and Mergers. The many reorganizations and mergers which are taking place today also affect older workers. Despite their advantages and their necessity from an economic point of view, they nearly always result in a cutting down of forces; and the older employees who are frequently slower, not so easily transferable and higher salaried than younger ones, are most often released.

Older People's Characteristics and Peculiarities. Then, too, the personal characteristics and peculiarities of the older employees increase their difficulties. The individual who has not become "set" and who has not developed some traits of mind and manners, which make him hard to fit into a new place, is rather rare.

The companies questioned agreed on this point in the ratio of four to one, although it is only fair to say that perhaps a third of them made no definite comment on it.

Problems Confronting the Employer. In addition to the chief causes of the problem, which were discussed above, there are certain factors—or sub-problems—which must be considered before the question of solutions is taken up.

Older Employees Grown Ineffective. The problem which is probably most frequently encountered is that of the older employee who has grown ineffective in his work and who sometimes is beginning to be physically disabled, when he has a good record and long service. What is the employer to do in his case—carry him on at the same pay, which is not really fair to employees, who are doing efficient work at the same pay, nor fair to the company? Or carry him on at reduced pay—which is hardly possible because the mature employee usually has definite responsibilities and cannot take lower pay? It is extremely hard for the employer to give such an employee simple work with adequate compensation. It is difficult to transfer him because his salary is too high for a beginning opening, yet another department head is reluctant to put him in an advanced place to which he naturally wants to promote one of his own people, and for which the candidate has had no special experience.

Employees' Positions Abolished. The replies to the questions: Have you had occasion to terminate employees of middle age and long service? How frequently? Under what conditions? analyze as follows: More than half of the companies stated that they have seldom found it necessary, and then only for extreme reasons. Those who have had occasion almost all modified their statements by explaining that such terminations usually had specific causes. Thus it will be seen that companies do not readily terminate older employees with good records.

Transfers. Transfers are the solution for a number of the problems connected with the older worker, yet that they themselves frequently present a problem or difficulty to the employer was affirmed by the majority (more than two to one) of the companies answering the question on this point. And his difficulty is not only with the older employee, but with his department head.

General Lay-offs. Another occasion for difficulties with older employees is at times of general lay-offs—whether temporary or permanent. The replies to the question concerning policy and practice in lay-offs about releasing people according to length of service or according to age, and about reemploying such people before taking on new, indicate that almost all companies make it a point to retain people who have been with them the longest time and to re-employ these people first when the lay-off is past. Half a dozen companies stated they do not have the problem and so have no policy concerning it. However, it is noticeable that many companies stress efficiency or good service equally or more than long service. An employee must have a good record as well as years of service to his credit before he can be sure of being taken back.

Executives and High-salaried Men. The problems connected with executives and high-salaried men are always particularly difficult to solve. It is very hard to transfer such people because in another department they cannot be placed over those who have been there for some time. Yet if they are given work at a lower plane, it is very hard for them to accept the necessary cut in salary.

The Loss of Older Peoples' Experience and Skill. Naturally most of the concern felt over the problems connected with the employment and transfer of older people is directed towards the workers themselves. Yet there is a strong feeling abroad that business and industry are losing something when able mature people are barred from their employ either because of an arbitrary rule or because of certain conditions. Evidence of this feeling is contained in the replies to the question: Do you feel that business and industry are losing valuable assets when because of rules and regulations, they are unable to employ mature people with their accumulation of experience? The companies agreed four to one on this point, and expressed themselves quite definitely.

Loss of Independence and Initiative. The question, Does the tendency to hold employees for long service tend to destroy their independence and individual initiative? was evidently not quite understood by some of the companies approached. The point in mind was: Does the feeling that if a man finds himself inside a large organization, he had better call himself lucky and stay there for the rest of his life, weaken if not destroy his courage, independence and initiative. A man or woman of middle age must be very careful nowadays before leaving a position—no matter how unhappy or no matter how much he or she wants to do something else—because it will be so hard to get another place. The majority do not think that long service in one company tends to lessen independence and initiative.

Problems Confronting the Employee. The employee's problems are really the reverse of the employer's problems. They will, therefore, be reviewed briefly in the following paragraphs since they have been discussed indirectly in the preceding sections. There is no intention, of course, to minimize the difficulties confronting older workers by this brevity.

It probably will be agreed without much argument that if a person continues to be efficient, mentally keen, in good health, industrious, cooperative, open-minded, and interested in his work, he or she will be successful and satisfied in his or her business life, and will neither be nor have any serious problem. Where difficulties occur in connection with the transfer or employment of an older person it is usually because he or she is not quite up to standard or "desirable"—hard as this may be for him or his friends to admit.

We will not again go over the difficulties connected with the *transfer* of an older employee; first, because while he may be worried when the company cannot seem to find another place to put him, he is still safe inside; and second, the question of transfer is more the employer's problem and it is he who has to solve it.

It is when an employee is actually *terminated* and becomes an applicant that his real troubles begin. If he has put in long years of service with one company, his habits have grown fixed and he usually knows only one line of work. Frequently such experience is of little or no value to another company. Indeed, he is often asked rather pointedly why his own company did not keep him after so long a connection.

A man or woman of middle age nearly always has definite responsibilities such as a home and a family to maintain; he or she must have a steady income and often cannot go below a certain salary. An excellent comment on this

point was made by one of the companies, even though it does represent the employer's point of view:

One of the difficulties in hiring older employees is the starting salary. We have a job classification, and we do not exceed our salary range except in exceptional cases. A man of forty may tell you that he is willing to come in at a runner's wage, but if you take him at that, you usually have a discontented employee and likewise often very unfavorable comments from the outside. For example: a man applies for a job and is willing to take anything. He is totally out of work and has a wife and several children. The maximum on the only opening for which he is fitted is \$1,000 a year. If we take that man, we would very soon hear comments on how badly our employees are underpaid; how the families were almost starving—which would, of course, be somewhere near the case under these conditions.

One reason why his termination frequently gives an older employee a very bad jolt is that his employer has not been sufficiently frank with him all along. He has not only been retained, but sometimes he has received salary increases based on his length of service rather than on merit, although all the while his employer has not been really satisfied with him. That this is a recognized situation is well illustrated by the following quotations:

In our training of supervisors and executives we continually emphasize their responsibility in scrutinizing the work of new employees in order to determine whether they have or have not sufficient ability to warrant their permanent retention in service. We teach them that it is a serious reflection upon them to hold an employee as long as four or five years on their payroll and then suddenly discover that he is not qualified for our work. It seems that any capable executive ought to be able to reach a conclusion in matters of this kind before the employee has had more than three years of service. The unfit should be weeded out early. If they are not, we, as a company, certainly incur an obligation because we have deprived them of a chance to make good in other fields.

It is management's duty to educate their foremen to weed out undesirable workers early in their service. If possible, employees should be transferred within the department during vacations, sickness, etc. New jobs are posted, thus throwing somewhat the responsibility back to the worker in case he has never tried for another position. All men of long service are checked periodically and when their production is falling off, steps are taken to seek other work for them before the situation becomes acute. This "labor loan" or temporary transfer policy under the unemployment fund has educational influence toward training for versatility.

Finding Another Place. In this matter of finding another place the older person is apt to go round in a vicious circle. To begin with, he is released because he is not quite up to standard. If he has a long hunt for a position, he is put under a terrific strain; he loses his perspective, loses his nerve, loses his good bearing and sometimes his good appearance. Thus it becomes increasingly hard for him to make a good impression on a prospective employer.

Suggestions to Employers. Open Mind Regarding Age. It will help ease the difficulties connected with placing older people, if employers will view the question of age with a more open mind. The studies of Professor

Thorndike and others have settled beyond much further question that older people can learn new things and can adapt themselves to new conditions. This being the case, it seems unfair—to say the least—not to give them a chance at new work. The older employee not only has his place, but his real value in the business and industrial world.

Company Policy Regarding Employees of Long Service. More than this, a company should have a definite policy regarding its older employees, and should see that department and division heads cooperate in carrying out this policy. In connection with this it will probably be necessary to cultivate the "company" in place of the prevailing "department" point of view.

We have already seen that companies have a definite policy of protecting older employees in connection with lay-offs. Practically all of the companies approached (there were only two exceptions) have just as definite a policy about retaining older employees when they have lost their full usefulness but have not reached the pension age.

Training for Older Employees. The question as to what educational plans the various companies have to increase the versatility of their older employees brought the information that not one gives special training to this class of employees. However, this statement must be qualified by the fact that the majority of the companies give general training—both by courses and on work—to all types of employees in order to increase their efficiency and versatility. As their comments will show, the companies feel that their older employees benefit from such training along with the others, so there is little need for them to have any special instruction. It is undoubtedly true that as time goes on the great majority of employees in large organizations will be so well trained that not only will their efficiency on their special line of work be brought to a high level, but they will be well acquainted with various phases of their company's business—thus increasing their adaptability and "transferability," and ending one of the chief difficulties connected with older people.

Consider Older People in Reorganizations and Mergers. While reorganizations and mergers cannot and should not be stayed because of individual considerations, it seems the part of wisdom as well as fairness to retain as far as possible older employees who are frequently steadier and have better judgment than many younger ones and whose knowledge of the business is a factor not to be ignored.

Transfers. Since it is frequently quite difficult to transfer older or advanced employees, employers will be interested in the following quotations which tell what these various companies do in connection with such transfers: For one thing they were unanimous in stating that they do everything possible to transfer and not terminate employees whose work has been done away with. In this group of replies is also discussed the practicability of transferring older employees to positions of lesser responsibility and reduced pay. Contrary to what might be expected, half of the companies have found it practicable to transfer them to lesser positions at reduced pay. About one-quarter of the companies said that they have continued these employees at the same pay on positions of less responsibility. Only half-a-dozen companies have not found it practicable to make this sort of arrangement.

Terminations. The replies to our question as to what special arrangements these companies make upon termination if a transfer cannot be effected, are particularly interesting. They analyze about as follows: Only three companies do not make some arrangement; three companies pay such employees from a fund—pension, unemployment, benefit, or service fund; ten state that they practically always effect transfers and do not have to terminate; and over half say they make special payments to these employees, if a termination becomes absolutely necessary.

Abolish Age Limit Rule. Since the majority of large companies do not have fixed maximum age limits for employment and in view of the employers' sincere interest in older employees and applicants, and considering the value of mature people in business, there seems no good reason why an arbitrary maximum age at the time of employment should be adopted. Men and women in good health should be given fair and full consideration for openings regardless of age.

Of course it is not quite so simple to eliminate those factors which automatically bring about age limits, although it is believed something can be done along this line if employers make a conscientious effort.

Modify Pension Plans (or Waive). For instance, it is plainly possible to lessen the effect of pension plans upon the employment age by grading pensions according to years of service under twenty years or by employing middle-aged people with the clear understanding that they will not be eligible to pensions upon retirement owing to insufficient length of service. This is now being done, as the replies indicated.

Promotion Policy. It seems agreed beyond further question that the policy of promotion from within cannot be changed or modified. It is only clear justice to have such a policy; it builds a strong, efficient and lasting organization; it lowers turnover; its disregard would have a most disastrous effect on the morale of a company; and it is the only outlet or reward for the increasingly large number of people who have become part of the great organizations and combinations which are taking the place of individual efforts. This is agreed to by applicants, as well as those within a company—all say that if they were inside, they would be only too glad to know that the company would recognize merit by promotion and would not put anyone from the outside over them. Not one has been encountered who was so resentful over the conditions which shut him out that he was ready to criticize the attitude of a company in advancing its own people.

Suggestions to Employees and Applicants. Despite the sincere sympathy and interest felt for older people faced with the difficulty of finding a new place in office or plant, it is generally agreed that they themselves are responsible for many of their own problems. This statement is not made coldly—but simply because the sooner older people realize this responsibility, the sooner they will set to work to correct the traits and shortcomings which are hindering them. And it is in this spirit that the following suggestions are offered to them.

Keep Work up to Standard. One thing that is absolutely necessary is that an employee make every effort to keep his work up to a high standard. In fact, he should try to become recognized as above the average. This is a day

of keen competition and no man (and no company) can afford to slacken. We have seen that companies give older employees every consideration in any crisis, but in turn they require efficient and conscientious service from the employees. While companies make many efforts in behalf of such employees, they refuse to say they are "obligated" to retain them regardless of quality of work.

Expert in Some Line. The man who has made himself an expert in some line evidently has a decided advantage over the man of general experience. In the first place if his work is of particular value, his own company is apt to keep him. If it does become necessary for him to find a new place, age limits may have to be waived in his favor if he is considered very good in his line. This is well illustrated by the replies received in answer to the question as to whether the difficulties encountered in employing mature people varied with those of specialized experience and those of general experience. More than half of our correspondents said they can do more for applicants of special experience.

More Than One Line of Work. From the comments just preceding, it is evident that while it is a good thing for a man to be especially qualified for certain work, there is some danger that he may be hampered at times by knowing only one line. It will be especially helpful toward transfer in his own company, if he knows several phases of its business. For this reason he should avail himself of every bit of training he can get and of every variety in work which may be offered him. The more he can learn relative to his company's business, the better. If outside study or reading will help him, he must not fail to add to his equipment by this means.

Attitude. Since it is pretty well agreed that the difficulties of older people are due in no small degree to their being set in their habits of work and of thought, not sufficiently adaptable nor teachable, not cooperative with associates, and above all not open-minded enough to new ideas and customs, it surely behooves them to watch out for these middle-age tendencies.

It is quite commonly recognized that a person's physical age and his mental age may be very different. It may not be possible for him to actually control the former, although care and good habits can do much to prolong full vigor, but he himself is largely responsible for his mental age. He should try continuously to keep alert and interested, and to keep a contact with the viewpoint and ways of younger people—whether or not he approves or follows all of them. It has been well said that "It is a bad thing to be out of step with your times."

If Transferred. If an employee finds he must be transferred, it is often better for him to accept the transfer and to stay with his company even if it involves a lower position and less pay. This often proves only a temporary situation, and a little later he finds himself advancing in his new place—especially if he takes trouble to learn his new work.

Finding Another Position. If it does become necessary for an older person to find a new place, his success will depend a good deal upon how he goes about it. First he should estimate his *assets*—his experience, his education, his personal qualities, and his contacts or alliances.

Then he should estimate his *liabilities*—has his experience been either too scattered or too narrow? Has his education been too limited? Is it practical, technical or academic? Has he neglected educational opportunities available during his spare time? What personal qualities does he have which hamper him: is he too individualistic, or on the other hand is he so much an "organization man" that he is lacking in originality and initiative? Is he impatient or egotistic? Does he disagree with too many people?

He should next appraise his probable value to a prospective employer. Probably he can offer the most in the line in which he has had most experience. Therefore he should apply to companies which use men for his kind of work. There is less chance with the larger companies for an older applicant, since they usually have some rules and policies which bar the employment of older people, and more particularly since they can usually fill their openings from inside.

Suggestions to Older Applicants. While frequently the employment manager cannot employ an applicant, he is glad to give a helpful suggestion and often does so, although it is difficult to offer concrete and practical suggestions. It is evident, however, that almost every one makes considerable effort to help older people. The most frequent suggestion is for them to try one of the smaller companies, since they are less apt to have age limits. Another suggestion is in regard to companies which have work for which the applicant is especially fitted; although some suggest to the applicant that he try to change his line of work, and so adapt himself to conditions. A good many companies refer such applicants to special agencies, such as trade or industrial associations.

The older applicant should watch his own attitude while seeking a new place. He must not lose his self-confidence—he does not need to because he is needed in the business world; it is only a question of finding the place where the need is acute. His accumulation of experience and knowledge are assets which the younger person cannot offer. He must not get a biased view because he is going through a trying experience; and he must not harbor a feeling of soreness over his situation, because that will only hamper and injure him.

Conclusions. A few facts stand out as we review this study: For one thing the companies all have an attitude of loyalty to their older employees; they practically never release one with long service and a good record. (It seems justifiable to say "all," since sixty companies replied to the questions, out of seventy-five who were approached.)

A good record takes precedence even over length of service and age.

Companies are sincerely interested in and sympathetic with older people's problems—those of applicants as well as employees.

It is very generally agreed, however, that older people's personal characteristics and peculiarities are obstacles in the way of their transfer or employment.

Few of the companies approached give special training to older employees, feeling that their general training benefits this class of employee along with the younger ones.

While there are no definite solutions, some of the suggestions made and practices followed would greatly alleviate the situation, if adopted generally by employers and older employees and applicants.

If the age limits continue to cause so many difficulties, some changes will have to be made. The group of companies were asked what they thought would be the ultimate results if the practice of establishing maximum age limits should continue. The viewpoint of a number of the companies is expressed in this statement made by one of them:

There can be no question whatsoever, but that the locating of large groups in corporations with regular systems of training, promotion and advancement, makes difficult the employment of mature men. Many men of high calibre and wide experience apply to the big corporations for work, but find no vacancies because of the excellent system the corporations use in preparing their young men for positions which may become open. Frequently mature men find themselves out of work after long tenure of office, on account of reorganization and improved methods of procedure. They are dropped through no fault of their own nor a desire on the part of their company to lose them, but merely because their work has been abolished. Every man of this type who is unable to locate another position becomes a serious unproductive loss to his community; also it results in hardship to him and his family. Therefore, unless industry takes this problem in hand and solves it, it will grow to a point where resort will have to be had to legislation.

RELATION OF MAXIMUM HIRING AGES TO THE AGE DISTRIBUTION OF EMPLOYEES AND TO THE PROBLEM OF UNEMPLOYMENT AMONG OLDER WORKERS

BY MURRAY W. LATIMER, *Industrial Relations Counselors, Inc.*

We have recently been hearing on all sides that industry has in late years begun to restrict the hiring of new employees over certain ages, sometimes cited as forty-five, usually in 1929 as forty. It is being asserted that these limits on hiring are well-nigh universal, and that their operation is causing an unprecedented amount of unemployment at ages above forty-five. This paper will attempt to trace the development of age hiring limits and make some analysis of the causes and present extent of their use. Some effort will also be made to ascertain their relation to the problem of unemployment among older workers. The material presented deals mainly with the wage workers. Statistical evidence is rather difficult to find on executives. For that reason, I have so far as possible excluded them and clerical workers as well although certain of the data presented here includes both classes. For executives especially, the data on hiring age limits have little application.

Restriction of Employment of Older Persons a Problem since the Beginning of the Industrial Revolution. It is most significant to remember that beginning with the industrial revolution, the entrepreneur, as an incident to the introduction of the factory system, gained control over his labor force more completely than he had under the domestic system. In previous systems where the employer did have complete control of the worker, either the

connection was life-long as in serfdom and slavery, or there was some opportunity for advancement as in the early stages of the handicraft system.

It was inevitable that the employers should use this newly acquired control over their working forces to reduce, in so far as possible, their labor costs. Under the *laissez faire* régime, competition became so severe that failure to utilize cheap labor was regarded as the equivalent of financial ruin. The utilization of child labor, the cheapest, was facilitated, of course, by the growing use of machinery, which was coincident to a considerable degree with the spread of the factory system. Among the many characteristics of machinery, two are important in this connection: (1) it enables less skilled persons to do the work formerly performed by persons of skill and experience, and (2) it permits employment of persons possessing less physical strength. The way in which this conjunction of events at the beginning of the industrial revolution was used by employers to fill their factories with women and children, need not be dwelt upon. Rather, the lessened employment of the older worker will be emphasized.

Allegations that elderly persons find it difficult to obtain gainful occupation probably have been heard in all ages, but for our purpose it is sufficient to observe that they had begun as early as 1818 when the London tailors objected that their period of usefulness was being shortened by the nature of their work. This, of course, was prior to the introduction of the factory system in the trade. Out of 405 journeymen tailors frequenting one house of call in London in 1818, only 4 per cent were of the age of forty-six or over and less than 1 per cent were as old as fifty-six. It was also stated that no one of those of forty-six years or over was regularly following his business as a tailor.¹

An official British commission stated in 1909:

It must, however, be remembered that the complaint of an increasing tendency to replace elderly men by the young is one that is always being made. In particular, it is to be traced as a constant refrain at every decade of the past century. In 1839, for instance, it was officially reported, as a partial explanation of the unemployment among the hand-loom weavers, that "a great majority, including those who are past fifty years of age, or who from any cause do not possess the requisite skill, quickness of sight and strength have great difficulty in getting employment to enable them to live." In 1848 we read, in terms that sound familiar, that "Workmen . . . are discharged as soon as grey hair appears, or a pair of spectacles is attempted to be used; many of the workmen straining their sight to the uttermost before they give in to be turned adrift through wearing them." "Old carpenters," it was said in 1850, "are generally despised by master builders; the failure of sight and wearing of spectacles is almost a death blow to many a good old tradesman. And in many cases a master will not give an elderly man employment at any price; the consequence is that many have been compelled to go to the parish for relief or into the Workhouse. Employers instruct their foremen to deny a job to men above a certain age." And further, "it is one of the chief evils of the carpenters' trade that as soon as a man turns forty masters won't keep

¹ United States Bureau of Labor, *Bulletin* 62, pp. 762-765, January, 1906, citing the *Gorgon*, pp. 154-160, Oct. 3, 1818.

him on." What was said in 1839 and 1848-50, was being said in 1894—still prior to the Workmen's Compensation Act. "Throughout the entire field of industry the shortness of employment is most largely represented in the progressive underemployment of the middle age. In many departments of labor, for example, among miners, sailors, mule-spinners, in metal and machine making, it is practically impossible for a man to have any security of work over the age of forty-five or fifty." We suspect, indeed, that the same thing has been alleged ever since the master craftsman, himself producing and selling his own product, was replaced by the capitalist hirer of labour.¹

Among the later recorded protests of the organized workers against the hiring policies of employers was one in 1887 in England, when the Amalgamated Society of Engineers complained that age limits were seriously restricting the opportunity for employment among their older members. In the thirty-seventh annual report of the society, it was stated that: "there is another powerful factor which is now prevalent in our government workshops, railway companies and municipal corporations and nearly every large establishment throughout the United Kingdom have a standing order that no man is to be engaged over forty years of age."

The volume of complaint against the prevalence of age limits in industry increased to such an extent that the Royal Commission on Poor Laws and Relief of Distress appointed in 1905 (from whose minority report the quotation given above was made) took occasion to make an investigation. In the minority report of the Commission, it was concluded that the discrimination against the older worker was largely fictitious.² No evidence of any decline of the average age of those employed either by particular firms or in whole trades was discovered. Statistics from the British trade unions indicated rather that the age of industrial workers was steadily increasing. The age distribution of a sample of the unemployed indicated that only 2.7 per cent were over sixty, while 80 per cent were under fifty.³

One observer testifies that there appears at present to be an unwillingness among British employers to take on new elderly employees. He says:

So far as I know, there is not in any large corporation a fixed rule in regard to a maximum age at which an employee is hired. While, however, such a rule does not exist on paper, it nevertheless is a practice to refrain so far as possible from taking a man on at any age above, say, forty-five. You would not be in order, however, in concluding that British industry generally regards a man as being too old at forty.⁴

A sample study of the unemployed in April, 1927, made by the British Ministry of Labour, indicated much heavier unemployment among men fifty-

¹ Report of the Royal Commission on the Poor Laws and Relief of Distress, Cd. 4499, pp. 1167-1168, London, 1909.

² Report of the Royal Commission on the Poor Laws and Relief of Distress, *op. cit.*, pp. 1168-70.

³ In 1911, 3.6 per cent of those gainfully occupied in Great Britain were sixty-five and over.

⁴ Letter of R. Lloyd Roberts, Imperial Chemical Co., London, to Murray Latimer, Aug. 13, 1929.

five to sixty-nine than for any other age groups. On the other hand, the proportion of unemployment among men forty-five to forty-nine was less than for those from twenty-five to twenty-nine (and that for men fifty to fifty-four was but slightly greater).

Age Restrictions in the United States. In the United States, assertions that hiring age limits were restricting the employment of older men, seem to have begun at a much later date than in Great Britain. Protests were numerous about 1900, especially in regard to railway employment, both steam and electric.

In the studies of steam railway employment in the United States, made prior to 1900, age limits for employment do not seem to be mentioned. In a report published in 1901 it was stated, however, that the "age qualifications have changed greatly in recent years and are now uniformly lower than they were ten years ago. It is now difficult for anyone over thirty-five years of age to enter railway service without previous experience and many do not employ men at all over this age."¹

In this 1901 study, four railroad companies operating 19,255 miles of road with 172,384 employees (of a total in the United States of slightly over 1,000,000) were examined as being typical. On the first road, train service employees, brakemen, and firemen, were not to be employed at ages over twenty-seven; conductors and engineers were to be promoted from the ranks of those so hired. Mechanics were not to be over thirty-five. All were to pass a physical examination or produce evidence of good health. On the second road, transportation and mechanical employees were to pass a physical examination, as were trainmen and engineers on the third road. On the fourth road, which employed almost 68 per cent of the employees covered in the survey, the maximum hiring age in any occupation was to be thirty-five.

Although no reasons for the limits were given, the implication was that they were due mainly to conditions surrounding the job, particularly the necessity of taking no chances in the interest of public safety. It is probable also that the seniority rules of the railroad labor brotherhoods were a factor. In 1905, a canvass by an investigator in the United States Bureau of Labor showed that the general age limit for newly hired motormen and conductors on street railways was forty. Actual hiring age limits on fifty-three systems ranged from thirty-five to fifty. The investigator had the following to say about hiring age limits:

Progressive shortening of the trade life by reducing the age at which men can enter employment is felt by many of the men as a great hardship, and is used as an argument to show the difficulty and nervous strain and the unfavorable conditions surrounding the work. In the old horse-car days a man of forty-five would ordinarily secure a position with the street railways, but now the tension and strain is felt to be so severe that the age at which new men are taken on is gradually lowered. On the average there are some eighteen years between the average minimum and the average maximum age at which men may be admitted into the service. The establishment of a low maximum like that of thirty-five years tends to force employees above the age limit to

¹ LINDSAY, SAMUEL M'CUNE, "Railway Employees in the United States," *Bulletin of the Bureau of Labor* 37, p. 1032, November, 1901.

become extremely cautious and conservative in the maintenance of their present positions.¹

Data as to the age and length of service of employees at retirement, which have been collected in the course of a pension survey conducted by Industrial Relations Counselors, Inc., indicate that the use of hiring ages for men on railroads began as early as 1870, probably earlier. There is also evidence that the age of hiring declined from the early seventies to the nineties, and after the middle nineties rose slightly. The nature of the data is such that historical evidence after the beginning of the twentieth century is not available.

So far as we have been able to determine, all the existing hiring age limits on steam railroads began more than twenty-five years ago; most of them antedate the establishment of pension plans. All the changes in railroad hiring age limits—four—which we were able to discover were in an upward direction, one being abolished entirely.

Data of the same sort for the steel industry indicate that the ages of employees hired were declining as far back as the 1880's. No increase in the average hiring age had appeared by 1895.

This brief survey suggests that the problem of hiring age limits in industry is an old one; that the origin was technological, and lies in physical conditions pertaining directly to the job rather than in extraneous conditions. The question, therefore, is whether the age limits which exist at present are still due primarily to these same causes, or whether additional reasons are now operating to perpetuate them.

Extent of Hiring Age Limits in 1929. First of all, it would be advisable to determine just what the hiring age limits are as of the present day. In the course of the pension survey already referred to, Industrial Relations Counselors, Inc., attempted to discover from firms maintaining pension plans whether or not a hiring age limit was in effect in the company, and if so, what it was.²

Returns were received from this inquiry as shown on page 1325.

In 101 of these 239 companies reporting the number of employees, or 42.2 per cent of the total, there was no age limit for hiring. These companies employed a little less than 26 per cent of the total number of persons covered by the survey. Ninety-five companies, or 40 per cent of the total, employing 61 per cent of the persons covered, either refuse or require high executive sanction to engage for their service persons over certain ages. Forty-three companies, or 18 per cent of the total, employing 13 per cent of the men, placed no restriction on the age of hiring but did not extend eligibility for pensions to persons hired over certain specified ages.

¹ WEYL, WALTER E., "Street Railway Employment in the United States," *Bulletin of the Bureau of Labor* 57, pp. 565-566, March, 1905.

² Certain limitations must be borne in mind. It is confined to companies with pension plans. Most of the reporting companies are large. It should be noticed that the very important construction industry is not represented at all in this survey. Whether the proportions derived from this sample apply to companies for which no return was made or those outside the scope of the survey is, of course, doubtful. The samples of the railroads and public utilities, however, are so large that it is fairly safe to infer that they are representative of the whole of their groups.

Companies maintaining non-contributory pension plans	Companies answering questions	Companies reporting number of employees	Number of employees
Manufacturing.....	87	85	1,010,505
Railroad.....	39	39	1,374,836
Public utility.....	47	46	518,648
Banking and insurance.....	21	21	62,154
Others.....	12	11	39,019
Total non-contributory.....	206	202	3,005,162
Companies maintaining contributory plans.....	42	37	108,563
Grand total.....	248	239	3,113,725

The differences in policy between various industrial groups were striking. For example, 76 per cent of employees on railroads were in the service of companies maintaining the so-called age limits, as were almost 90 per cent of employees in public utilities. Of the total number of employees in companies selecting as new employees persons under certain ages, almost 80 per cent were in these two groups. On the other hand, only 33 per cent of employees in manufacturing industries were in such organizations, and they represent but one-sixth of the employees in all companies having age limits for new workers. It is evident, therefore, that among public utility and railroad companies the chances of obtaining employment in companies with a pension plan are quite small for a person over the age limit, which is usually forty-five. On the other hand, his chances of obtaining employment in manufacturing appear to be two to one, and there is even greater likelihood of his being employed without loss of pension privileges.

A word about the restrictions in public utilities is in order. Some of the large companies in this field have a virtual monopoly on their branches of the industry. The work is highly technical and, much of it, unique. In order to obtain an adequate supply of competent employees, they must be hired when young and trained for a long period. Normally, these companies expect to keep such a person for life; there is usually, moreover, no other occupation in which the peculiar training could be utilized. On the other hand, persons over the age limit are quite frequently hired for jobs for which their training fits them.

A recent study made by a committee of the National Association of Manufacturers indicates that only 28 per cent of the number of companies making returns impose hiring limits.¹ Of the eighty-seven companies in manufacturing making returns for our inquiry, only twenty-one, or 24.1 per cent, impose such limits. The number of establishments covered by the questionnaire of the National Association of Manufacturers, the nature of

¹ *American Industries*, vol. 30, No. 3, p. 62, October, 1929, New York, 1929.

their business, the number maintaining various types of benefit plans, and the number of employees is not given, so that no definite conclusions may be reached. The implication is, however, that manufacturing companies maintaining pension plans are not more likely to impose age limit restrictions on hiring than is a company which does not have such a plan.

The hiring age limits as brought out by our study vary widely. A few companies have a policy of promoting only from within their own ranks and doing all the training themselves. The hiring age limits are, therefore, very low. Of the ninety-six companies maintaining hiring age limits, fifty-three had a maximum of forty-five, and fourteen of forty; in fifteen it was thirty-eight or lower, and in fourteen the limit was fifty or more.¹ These ages given represent the maxima. In certain occupations, especially for train service on the railroads, the entrance ages are much lower than the maximum for the road.

In the companies whose restriction concerns eligibility for pensions rather than hiring age, the maximum age set was lower than forty in one case; was exactly forty in eleven; between forty and forty-five in thirty-one; and fifty or over in eight.

There are some indications that the hiring age limit is connected with large scale operation. It is noteworthy that the largest companies reporting in each industry were those which maintained hiring age limits. Of all the companies in our sample, the average number of employees of those maintaining no age hiring limit is about 8,000; companies having a hiring limit, about 19,000; and for those with maximum eligibility limit, a little less than 10,000. These differences in size persist through all types of industry. For example, in the manufacturing industries, the average size of companies with maximum hiring ages is over 15,000; maximum eligibility age, a little less than 10,000; and companies with no maximum, about 11,000.

This difference in size suggests that these large firms, because of better management, can establish definite policies, but that the smaller ones are often more haphazard in their methods and hire and fire at random. Moreover, the larger firms can usually find suitable men for promotion from among their own employees, whereas the smaller company may frequently find it necessary to obtain the proper person for a particular job outside the company. Again, the jobs in a large company are likely to be more specialized so that relatively more of them are suitable for old persons than would be the case in smaller companies in which each employee performs a wider variety of tasks. The introduction of trucks, cranes, automatic lathes and similar devices in many cases tends to reduce the physical effort required and offer certain jobs to men past the prime of life. Jobs capable of being filled by older persons are, in these larger companies at least, reserved for the men who have grown old in the service of the particular company. Hence the age limit against the others. On the other hand, speed in movement—of body, or arm, or eye—is a necessary qualification for certain jobs. Not only speed, but also unusual bodily strength may be demanded of employees in those industries,

¹ The number of companies in these totals differs from the totals given on p. 1325; nine companies are included here which made no return as to number of employees.

or sections of industries, usually characterized by large scale mass production, in which the pace of work is set by a machine or moving belt. Workers are less able to meet these requirements as they grow older. An interesting sidelight on this aspect is that immigrants who were in industry before coming to this country frequently prefer employment in small organizations and refuse to work in large establishments. There are, therefore, divergent influences at work, some of which tend to facilitate employment of older workers, though this tendency may be limited by imposition of hiring age limits, so far as the actually unemployed are concerned; other influences tend to limit the use of older persons.

The existence or absence of hiring age limits does not indicate whether the influences tending to reduce the employment of older persons or those tending to increase the number are preponderant. An investigation of practice rather than of policy is needed.

The need for such an inquiry is brought out also by the fact that the age limits given here are taken from questionnaires which merely asked whether or not a maximum hiring age for employees had been established. One of the disadvantages of this method of obtaining information has been that for the most part we were unable to discover whether the limits are effective or ineffective. That these objections have considerable reality is made manifest to us by examination of detailed records of a few companies. In one company having a hiring limit of forty-five years, about 2,000 persons over the age limit were newly employed during the last two years. Similar figures can be cited for other companies. In cases where no formal policy exists, on the other hand, the actual practice may result in limiting entrants to young persons. For example, a company was found which has never introduced a formal age limit, but which in practice hires no one over age thirty-eight. This company claims that older persons have been tried but have been found to be unable to perform their tasks.

Actual restriction of opportunities for employment, therefore, cannot be measured by a company's formal statement of such restrictions. What is needed is a complete study of the age distribution of employees at various periods and a study of the actual ages of those employed and those leaving the service of a large number of companies.

Some clue to the situation is discovered, however, by analysis of the age and occupation data in the decennial censuses, together with certain other data on age distribution which have been collected by Industrial Relations Counselors, Inc. Certain other recent observations are also useful. These data, though fragmentary, constitute an attempt at direct approach to the problem of unemployment among older workers.

Age Distribution of the Gainfully Occupied 1870 to 1920. Data as to the age of persons gainfully occupied were first obtained by the census of 1870. The summary of age classifications for 1870 and 1880 differ from those used since that time, and in 1910 all persons above forty-five were grouped together. Moreover, the industrial classifications themselves have been changed, certain occupations being included in one division in one census and in another classification in another census. Only a partial regrouping of the occupations has been attempted by Industrial Relations Counselors, Inc.,

since the primary object of the survey has been a study of pensions, not a study of age distribution.

Without going into detail, the following may be observed:¹

1. Between 1870 and 1880 a notable increase in the labor of children was reported (which may have been due to the defective enumeration in the South in 1870) and a slight increase in the oldest age group, that of sixty and over, relative both to the age group in the population and the number of gainfully occupied persons.

2. In 1890 the classification of children was different from that of any other census and cannot be used for comparative purposes. Comparing 1880 and 1900, there were fewer children employed as compared with the total number of those gainfully occupied, but more as compared with the total number of children. Between 1900 and 1920, there was an enormous decline in the employment of children.

3. The change in the date of the census from June 1 in 1900 (and in the several preceding) to Jan. 1 in the 1920 census, may have helped to exaggerate the reported decrease in child labor, because of the fact that on Jan. 1 many children were in school who on June 1 might have had jobs.

4. Between 1890 and 1900 the proportion of persons employed between forty-five and sixty-four increased by about 1 per cent; by 1920 the proportion was about 4 per cent above 1900. The gainfully occupied belonging to the age group sixty-five and over fell from 4.4 per cent of the total gainfully occupied in 1890 to 4.1 per cent in 1900 and 1920, while at the same time those of the total population 65 and over who were gainfully occupied dropped from 42 per cent in 1890 to 39 per cent in 1900 and 34 per cent in 1920.

The factor of sex should not be overlooked in studying the ages of those gainfully employed. The relative number of persons between forty-five and sixty-four reported as gainfully occupied increased about 5 per cent in the thirty-year period 1890 to 1920 (the only period for which federal census data so classified are available). For men alone, however, the proportion declined about 1.5 per cent; while the proportion for women increased over 35 per cent. The proportion of those sixty-five and over, reported as gainfully occupied, declined 18 per cent in the same period; about 19 per cent for men and 3.6 per cent for women.

This decline in the gainful occupation of men forty-five to sixty-four between 1890 and 1920 can be accounted for entirely by the decline in agriculture. The number of men of these ages in agriculture, relative to the total in the same age groups fell by 31 per cent in the thirty-year period. In the manufacturing, mining, and mechanical industries, on the other hand, there was an increase of 15 per cent, and a rise of 29 per cent in all other occupations. The employment of women forty-five to sixty-four fell more in agriculture than did the employment of men, and rose more sharply in the other occupations.

Substantially similar observations hold true for the group age sixty-five and over. The decline in the proportion of those reported as gainfully employed

¹ Tables on which these statements are based are given in this paper printed as *Personnel Series, No. 3*, American Management Association.

may be accounted for mainly by the relatively dwindling agricultural population. The manufacturing, mining and mechanical industries took as large a share of the men over sixty-five in 1920 as in 1890, and increased the proportion of women by over 22 per cent. In the occupations other than these four groups—agriculture, manufacturing, mining and mechanical—the proportion of both men and women gainfully occupied increased—19 and 21 per cent respectively.

The census data indicate on the whole a decline in the employment of persons sixty-five and over; and an increase in the employment of persons forty-five to sixty-four. The decline can be accounted for wholly by migration from farms; the increase by the fact that this same migration is more than offset by the increase of women gainfully occupied and by increases in occupations other than agriculture.

While the weight of the census evidence, therefore, is that the amount of permanent unemployment among older workers outside of agriculture did not increase prior to 1920, but rather the reverse, it is to be remembered that in no census has there been any complete check-up of unemployment. There seems, however, to be no reason why the error introduced by this failure should be greater in one census than another.

The 1920 census is now ten years old. We know that there have been unprecedented shifts in industry since that time. What has been the effect on the ages of those gainfully employed? The question cannot be answered directly, but there is some significant evidence.

Age Distributions in Industrial Companies, 1911 and 1929. In order to ascertain what has occurred in the past decade, Industrial Relations Counselors, Inc., has begun the collection from a number of large corporations of data as to the age distribution of employees in 1929. The census age classifications are such that it is impossible to make divisions for single industries within the broad groups.¹

In searching for data with which to compare the present distributions, we discovered that in 1911 a congressional committee on immigration, in the course of an investigation, had made analyses of the ages of employees in certain industries. These analyses were mainly concerned with wage earners and were classified by industry. While comparisons of 1929 and 1911 will not show what has happened from 1920 to 1930, nevertheless certain tendencies may appear.

Returns which we believe to be adequate samples have been received for 1929 from three industries—iron and steel, oil refining, and slaughtering and meat packing. Data were received also from several firms in the agricultural implements and bituminous coal mining industries which are indicative of age distributions in those industries, but which we hope to supplement.

In the iron and steel industry, the relative proportion of those employed whose age at the time of the investigation was below forty-five declined as between 1911 and 1929; the agricultural implements and bituminous coal mining industries employed relatively fewer thirty-five and under; oil refining

¹ The New York State Commission on Old Age Security will attempt an exhaustive investigation in this field.

fewer thirty and under; and slaughtering and meat packing fewer twenty-five and under. Though different in the age of incidence and degree of change, all five industries employed relatively more persons over forty-five in 1929 than in 1911. All five industries employed proportionately more between forty-five and sixty-four, while three out of the five employed relatively more persons sixty-five and over in 1929 than in 1911 (Table I).

TABLE I.—PERCENTAGE DISTRIBUTION OF EMPLOYEES BY AGE GROUPS AND RELATIVE CHANGES, 1911 AND 1929

Age group	Agricultural implements		Bituminous coal mining		Iron and steel manufacturing		Oil refining		Slaughtering and meat packing	
	1911	1929	1911	1929	1911	1929	1911	1929	1911	1929
Under 20.....	9.0	5.0	10.3	4.8	.....	.....	9.7	0.8	12.4	3.6
20 and under 25.....	18.9	13.6	18.3	16.8	.....	.....	18.9	7.9	20.9	15.5
25 and under 30.....	18.7	14.0	19.1	16.4	86.7	75.5	16.9	15.9	18.6	19.5
30 and under 35.....	13.6	11.5	15.9	15.2	.....	.....	14.2	19.1	13.2	17.2
35 and under 45.....	20.9	30.6	21.7	26.7	.....	.....	23.4	32.7	18.8	26.9
45 and under 55.....	13.1	16.9	10.6	14.2	9.5	15.3	12.4	16.5	11.2	12.0
55 and under 65.....	4.7	6.8	3.5	4.9	3.1	7.5	3.7	6.4	4.0	4.5
65 and over.....	1.1	1.6	.6	1.0	.7	1.7	.8	.7	.9	.8
Total.....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

CHANGE IN PROPORTIONS

Under 20.....	-44.4	-53.4	.....	-91.8	-71.0
20 and under 25.....	-28.0	- 8.3	.....	-58.3	-25.7
25 and under 30.....	-25.2	-14.1	- 12.9	- 5.8	+ 4.8
30 and under 35.....	-15.2	- 4.3	.....	+34.6	+30.2
35 and under 45.....	+46.5	+23.6	.....	+39.5	+42.9
45 and under 55.....	+29.0	+33.9	+ 60.9	+33.0	+ 7.2
55 and under 65.....	+44.8	+39.9	+141.8	+72.8	+12.5
65 and over.....	+45.4	+66.7	+143.0	-12.5	-11.1

The extent of these increases is striking. The change in the proportion of persons forty-five to fifty-four employed was as follows:

	Per cent
Agricultural implements.....	+ 29
Bituminous, coal mining.....	+ 34
Iron and steel.....	+ 61
Oil refining.....	+ 33
Slaughtering and meat packing.....	+ 7

and for persons fifty-five to sixty-four:

	Per cent
Agricultural implements.....	+ 45
Bituminous coal mining.....	+ 40
Iron and steel.....	+142
Oil refining.....	+ 73
Slaughtering and meat packing.....	+ 13

In agricultural implements, the proportion of employees 65 and over increased 45 per cent; in the steel industry, 143 per cent; in bituminous coal mining, 67 per cent. In the other two industries the proportions declined 13 per cent in oil refining and 11 per cent in meat packing. The companies in three industries making returns, agricultural implements, oil refining, and slaughtering and meat packing, maintain pension plans providing for retirement, usually at the option of the employee, at sixty and sixty-five. This might partially account for the decline in the proportion of persons sixty-five and over in the latter two industries.

Despite the increase in these industries, it ought to be observed that the proportion of employed persons sixty-five and over in these industries is much less than the proportion of persons of the same age to the population ten years of age and over. The proportion of those employed between forty-five and sixty-four is greater than for the population over ten. Both comparisons are rendered somewhat inaccurate by the fact that few persons under sixteen or seventeen are employed in any of these five industries.

Some idea of the situation in companies for which no comparisons can be made may be gained from data concerning retirements on pension. On the railroads, for example, the number of persons retired has increased very rapidly for many years, and the growth of the pension rolls gives no indication of cessation. Moreover, employment on railroads has been declining. Data on the average age of all persons retired show no great movement in either direction. It seems to be true, therefore, that the age distribution of railroad employees is steadily tending upward. This in general is the experience of all companies maintaining pension plans.

While the average age of all employees retired under pension plans for which data were available, has not changed materially over the past twenty years, nevertheless there does seem to have been a definite change in the ages at which persons were retired for disability and the ages at which they were retired for superannuation. On the whole, the average age of persons retired for superannuation has increased slightly, while persons becoming disabled, seem to be somewhat younger. Moreover, on the railroads, in the steel mills, and in certain other industries as electrical apparatus and transportation equipment, the number of persons retired on account of disability is increasing more rapidly than retirement for superannuation. In this connection it is to be remarked that disability rates in industry are higher than rates for permanent and total disability used generally by insurance companies in connection with life or group policies. The difference is accounted for by permanent and total disability for specific occupations or groups of related occupations. Such permanent and total disability as comes within the service requirements of pension plans seems to be increasing.

The evidence is confused somewhat by reason of changes in the requirements for receipt of pension and by possible changes in administration, many of which are necessarily unknown to persons on the outside. It is known, however, that the constantly mounting expenditures under pension plans have forced companies recently to postpone retirement of persons who might have received pensions earlier under former conditions. On the other hand, a number of companies have made studies of payroll relief with reference to maintenance of a pension plan and have become convinced that prompt retirement of inefficient persons effected considerable economies. They have been less concerned with the gross expenditures for pensions than with net savings.

Finally, the limitation of immigration will probably tend to cause an upward movement in the age distribution more rapid than would have occurred had immigration been at pre-war levels. It is impossible to say just how much change will be attributable to this cause. The influence will be felt mainly in the East, and naturally the large industrial cities will be more affected than will other sections and smaller centers.

Most of this refers to persons who are actually at work. What of the elderly man unemployed? One may doubt, in the first place, if it is possible to make any general statement. There are nevertheless some few indications that statements concerning the inability of persons forty-five years of age and over to obtain employment have been exaggerated.

At a meeting of the Eastern Massachusetts Section of the Taylor Society in Boston, held in April, 1929, the Director of Statistics, Department of Labor and Industries, Commonwealth of Massachusetts, presented records dealing with the placement of men and women applicants for employment at four Massachusetts public employment offices in 1928. The male applicants (15,453) were divided into six age groups. The following were the percentages of each group actually placed in employment:

	Per cent
Under 25.....	55.1
25 to 34.....	55.3
35 to 44.....	54.7
45 to 54.....	59.5
55 to 64.....	42.9
65 and over.....	28.6

These data indicate no discrimination prior to age fifty-five. A finer age classification might well reveal an even older age. But even so, the person fifty-five to sixty-four has apparently on the average over three-fourths as much chance of obtaining a job in Boston, Springfield, or Worcester as a man under thirty-five. The average, however, does not reveal the whole story.

At the Springfield and Worcester offices where many of the applicants for employment seek positions in the metal industries, a larger proportion of those under forty-five years of age were placed than of those forty-five years of age and over, but at the main office in Boston where there is a greater diver-

sification of industries the reverse is true. At the mercantile office in Boston, however, a much larger percentage of male applicants for clerical and office positions under forty-five years of age are placed than of those forty-five years of age and over.¹

This seems to indicate that such discrimination as there is is inherent in the job and not due to extraneous circumstances. Whether any older applicants were rejected purely by reason of age is not stated.

Women applicants were divided into two age groups only—over and under thirty-five. A considerably larger proportion of those over thirty-five were placed than under thirty-five. This seems to be accounted for by the fact that most of the women were placed in domestic employment. In stores and offices, there was a marked discrimination against women over thirty-five.

On the whole, a general statement of the facts concerning age limits in industry might be made somewhat as follows: *The introduction of machines, the whole process of mechanization in industry, has always caused displacement of a certain amount of labor. Complaints on this score indicate that whenever such changes occur, older persons have had more difficulty possibly in obtaining new jobs than younger ones, irrespective of whether maximum age hiring limits were imposed by employers.*

Why, therefore, have hiring age limits been resorted to? In the first place, it is unlikely that imposition of hiring age limits has been very closely connected with the inauguration of employee welfare schemes. The data which are available indicate that age limits are about as prevalent in companies which do not as those which do have various types of benefit schemes. Moreover, in many, if not in the majority of cases, the limit antedates the benefit scheme. So far as pensions are concerned, expenditures, though growing rapidly, are generally less than one per cent of payroll and so far probably are almost altogether offset by economies realized through the retirement of inefficient employees. In the case of group life insurance, the costs are quite low on the whole and possibly the economies are not so apparent. Nevertheless, it seems to be extremely doubtful that group life insurance has had any great part to play in the imposition of hiring age limits for new employees. It is quite true that the costs for older employees in both pensions and life insurance are several times the cost for younger employees, but the total cost in relation to payroll and possible savings by elimination of the relatively few older men, who would in any case be engaged, would result in relatively small economies. Some twenty years ago when insurance was being handled almost exclusively through mutual benefit associations, the members of these associations ordinarily refused admission to persons over certain ages—thirty-five, forty-five, or fifty. These restrictions do not appear to have been taken over by the companies themselves. So far as workmen's compensation is concerned, the situation is more doubtful. One suspects that even if the costs for old men are higher than for younger, the employers

¹ The quotation and the other data concerning the records of Massachusetts public employment offices taken from "Employment Age Limitations," *Bulletin of the Taylor Society*, vol. 14, No. 5, pp. 223-8, 1929.

do not know it. All these costs could be kept down by laying off men over a certain age, but any such blanket policy would be suicidal. Talk of general firing age limits for employees above certain ages in any industry is sheer myth. While it is true that within corporations there is considerable readjustment in the tasks of men as they grow older, cases of wholesale lay-offs of men above any specified age are exceedingly rare.

Hiring age limits, as has been pointed out, have occurred largely in the plants of greatest size. Such organizations are those which have usually established a centralized employment department. These employment departments in many cases have attempted to control rigidly the hiring policies of the corporations and the age limit at hiring has in many cases been an incident to such control. Among the things which a good employment department tries to do is to translate the feeling of responsibility of the particular company for its men of longer service into terms of jobs within the organization. In order to do this, it necessarily excludes from a number of positions which can be filled by older men, persons from outside the organization. If this were not done, and a decentralized employment policy were followed, the task of adjusting the work to the capabilities of the older men would be vastly more difficult and probably in many cases would be rendered entirely fruitless.

Briefly, hiring age limits are the rule in railroads and in public utilities. They are still the exception rather than the rule in manufacturing companies. Their existence, as well as the failure to employ older men in the absence of a formal policy, is due to:

1. The demands of certain jobs which employees not in their prime cannot meet; that is, permanent and total occupational disability.
2. The demands of public safety on railroads.
3. Seniority rules on railroads.
4. In certain large public utilities the necessity for training for life jobs in a unique type of work.
5. The saving of jobs capable of being filled by older workers for employees of long service.

The evidence presented in this paper points to the first as by far the most important cause.

Recent Complaints against Hiring Age Limits. The explanation of the unusual volume of complaints as to hiring age limits in the last few years probably lies in the decline in employment in manufacturing industries, despite prosperity, and the downward trend in employment on railroads. Prior to 1922, declines in employment in all the large industrial groups occurred only at the time of depression when men, young and old, were affected together, and once the cycle turned upward employment ordinarily was not hard to find. In the last seven-year period, however, the constant shrinkage in employment has necessitated a shift in the occupation of many of those who seek new jobs. It was entirely natural that this condition, coupled with change in technique and more mechanization, should fall heavily upon the older man. *Nevertheless, the data of five industries indicate*

that the changing processes and industrial shifts have fallen even more heavily upon younger men. This probably would be true whether or not hiring age limits are commonly established. Moreover, the implication of the facts presented here is that had such a condition occurred at any time in the last thirty years, the effect on the older man would have been precisely the same. It is quite probable that the existence of hiring age limits would have been blamed for the situation.

If the statement of facts and their interpretation have been correct, it is possible to say that the abolition of age limits for hiring would not materially change the situation since the existence of age limits derives from the nature of jobs to be performed. It must also be said that the passage of a state old age pension law, modeled along the lines of those in the ten states which now have them, will afford little, if any, remedy for this situation. While they may in a few cases assist older workers to obtain employment by reason of relieving a prospective employer from the fear of a possible future burden, nevertheless they will do nothing to change the nature of the jobs which these older men will be called upon to fill.

It seems safe to conclude, therefore, that the real problem is not the adoption of hiring age limits, nor of arbitrary discrimination against the man over forty-five, but rather permanent and total occupational disability. There are a number of ways by which this problem might be met. The only two devices for meeting it in wide use today have been developed by industry itself. The first of these agencies is the industrial pension plans, a majority of which pay pensions for permanent and total disability, a definition which for them includes occupational disability as well as general. Group life insurance policies provide for payments for permanent and total disability, but the definition of such disability is narrower than under pension plans. Workmen's compensation takes care of much disability, but not of the sort here under discussion. The second agency for meeting of the problem of the worker who is not able to meet the changed conditions of his job, lies in the personnel programs of many American corporations. Even though the worker himself be unable to meet the new requirements without assistance, careful and patient training in many cases would fit him for the task. Such training many companies attempt to give him. If the disability cannot be removed by training, there can be a transfer to another job; or if no place is open, and the requirements have been met, a pension may be granted.

These agencies are not perfect. The pension plans by reason of their long service requirements to provide for many disabled employees, though new pension plans are much more liberal than the older ones. Both kinds of programs are as yet adopted by only a minority of companies. There is an imperative need for much broader and more far-reaching agencies, possibly modeled along the existing schemes, but more liberal, possibly of a different type altogether.

It should not be forgotten, moreover, that while this whole problem is serious, it does not seem to be getting worse, so far as the occupations outside of agriculture are concerned; but rather better. The factors tending to make possible the greater utilization of older workers in industry seem to have the upper hand.

INDUSTRIAL PENSION PLANS

BY EDWARD S. COWDRICK

Preliminary Decisions of Management. The industrial manager who is considering the adoption of a pension plan or the revision of an existing plan should first of all reach decisions on the following questions:

1. Shall the company have any pension plan?
2. Shall the pension be contributory or non-contributory, and what shall be the extent of the benefits?
3. What shall be the principal terms of the plan?
4. What will be the immediate and ultimate cost of pensions and how shall this cost be met?

Nature and Purposes of Pensions. In determining whether or not a company should pay pensions to superannuated employees it is wise to consider first the nature of industrial pensions and the reasons by which, if at all, their payment can be justified. Lack of clear thinking on these points has accounted for much distorted reasoning on the whole pension question.

Pension Problem of Recent Origin. The industrial pension problem is distinctly a product of modern conditions. Of the pension plans in effect in the United States, only a handful were in existence before 1900. It appears that until recent years the relief of old age, even in industrial countries, was mainly a part of the general problem of poverty. Laborers in general had little more than the means for bare subsistence, and if the destitution of the aged worker was more abject than that of his sons or his grandsons, the difference was in degree rather than in kind. Workingmen were expected to earn their own bread throughout practically their entire adult lives. Those who through any misfortune failed to do this were normally supported by children or other relatives, with the poorhouse as a last refuge.

Twentieth century industry has radically altered this condition. For one thing, the expectancy of life has risen, with a corresponding increase in the number of workers who reach or pass middle age. But as the years of life have increased, the proportion of those years available for earning a livelihood has declined. The working period has been lopped off at both ends. The spread of education and the decline of child labor are sending workers into industry at higher ages than in the past, while at the same time there is proportionately less employment for the laborer who has grown old or has even come to later middle life. The worker who has passed middle age may not actually be dropped from his employer's pay roll; probably he will not be dropped so long as he is able to perform his task with an acceptable degree of efficiency, but once out of employment, for whatever reason, he finds that jobs are scarce. For reasons which need not be discussed here, an increasing number of employers prefer not to take on new employees at ages beyond forty or forty-five.

Other Hazards of Age. While this process of shortening the working period has been going on the laborer has suffered loss in respect to at least one

of his sources of support in old age: the support from his children. The laborer of today is likely to marry late, in comparison with the customs of his ancestors, and to have relatively few children. These children, marrying late in their turn, may be expected to be in the midst of rearing their own families just at the time when their parents are in need of aid. The margin of income available for the support of the passing generation is usually small. It is true that these disadvantages are offset partially, perhaps in many cases wholly, by the greater prosperity of the working classes. But this increased prosperity, except in unusual cases of thrift, works to the advantage of the man whose earning power is unimpaired, rather than to that of the retired laborer.

The need for organized maintenance of the aged probably has been increased also by the conditions of modern American life under which proportionately larger numbers of the population are wage earners and renters, and proportionately smaller numbers are farmers, small shopkeepers and home owners. In an earlier agricultural period the aging farmer was likely to find both a home and a livelihood in the land which he had acquired and improved during his more active years, while his sons, not yet come into their expected inheritance, often were content to contribute their labor to the family's support. Likewise the average shopkeeper with a home at or near his place of business could carry on with the help of his family long after the age at which he would be acceptable as an employed workman.

An industrial era has brought radical changes in all these conditions, at least in their effect upon a large portion of the population. Wage earners have been attracted to large cities or crowded industrial centers, where housing problems are acute and the cost of real estate makes home ownership difficult for the average workingman. To an increasing degree the family income is dependent upon one breadwinner. As long as this breadwinner is employed at good wages the family is likely to live on a scale of comfort far superior to that afforded in an earlier and simpler era, but if he falls ill or by reason of age or other cause is unable to get work, the economic plight of the household is likely soon to become desperate.

Corporations Are Older. Another element that has profoundly affected the need for support in old age, in so far as it relates to industrial employees, is the increasing age of industrial organizations, themselves. A company in its first twenty to twenty-five years is likely to have no pension problem at all unless it has hired men already past middle life. Up to the beginning of the twentieth century most of the large industrial corporations were of comparatively recent growth. Many of them are still in that condition. An increasing number, however, have been in operation continuously for forty or fifty or more years and have accumulated a relatively large number of pensioners and of employees approaching retirement age.

For all these reasons the need for organized support of workers in old age has become increasingly urgent. At the same time the growing wealth of the country has pointed to the possibility of meeting this need more liberally than could have been done in the past. Pensions, public and private, have grown in numbers and in the importance of their contribution to social and industrial economy.

What Is an Industrial Pension? Among the theories that have been advanced by those who have sought to classify industrial pensions are the following:

1. A pension is a deferred wage.
2. A pension is a charity or gratuity; and therefore, according to some arguments, an improper expenditure of company funds.
3. A pension is payment for continuity of employment, as distinct from actual services for which compensation was paid currently.
4. A pension is a deserved reward for long and faithful service.

By present day thinkers, some of these theories have been discarded, while others have been relegated to minor positions. It is now generally conceded that a pension is not a "deferred wage"—or any other kind of a wage. Nobody "earns" a pension. Furthermore, a pension is not—or should not be—primarily a benevolence; it scarcely could be justified on charitable grounds. The theory that a pension constitutes payment for continuity or something else not currently compensated has little weight except possibly in the thought that it provides a legal justification for something that might otherwise be an unwarranted gratuity. Neither is a pension, to any considerable degree, a reward for service; one would be hard put to it to defend the payment of money merely for longevity.

What, then, is the nature of an industrial pension?

First, it is a part of the employer's personnel program, the aggregate result of which is expected to be improved efficiency and morale among the working force. In this program the pension is of importance mainly because, through lessening the dread of poverty in old age, it helps to rid the worker's mind of worry over the future. A pension also probably has some effect in reducing labor turnover. To whatever extent it increases contentment and promotes friendly feelings between employees and management, a pension contributes directly to efficiency.

More important than all, and constituting the main justification for an industrial pension, is the service it renders in furnishing a means by which superannuated employees may be removed from the active pay roll without offense either to the conscience of the employer or to the opinions of other employees or of the public. In the lack of a pension plan, management—management of a large or conspicuous corporation at any rate—is likely to retain workers on the active pay roll long after they have passed their periods of usefulness. This policy, it is generally admitted, usually is more costly than any reasonable expenditure for pensions.

Basis for Decision. It is by keeping in mind the nature and purposes of industrial pensions that the management of a business organization can best determine whether or not a pension plan should be adopted. Recognition of the advancing age of the working force and of the prospective, if not already existent, superannuation of some of the employees, leads logically to the conclusion that the cost of old age will have to be paid in some way by the company, whether or not it maintains a regular pension plan. Few managers are willing to throw out aged employees to be supported by the public. Under typical conditions the choice lies between pensioning aged workers,

formally or informally, and retaining them on the active pay roll at such jobs as they are able to do. Present day industrial thought inclines toward the pension alternative.

Contributory and Non-contributory Pensions. A non-contributory pension is one in which all the expense is borne by the employer. A contributory pension is one in which employees themselves pay a part of the cost. In some contributory plans the payments of the employer and of the employees go into a single fund out of which all annuities are paid. A more recent and in most respects a preferable procedure is to administer the company fund and the employees' fund separately, with a minimum allowance from the company supplemented by pensions paid for by the workers. Either a contributory or a non-contributory pension may be paid in the form of annuities purchases from an insurance company.

Arguments for Contributory Pensions. Until recently the weight of industrial opinion has been strongly on the side of pensions paid for and controlled by the employer. Even yet a large majority of industrial pensions are of the non-contributory type. Recent years, however, have seen a tendency in the direction of contributory pensions. It is yet too early to predict how far this tendency will go.

On the side of the contributory pension there are impressive arguments. In the first place, if it is reinsured, or if obligations are covered by a sufficient reserve fund definitely set aside, it is practically certain to be paid, since it is not dependent upon the whim of the employer nor even upon the permanency or solvency of the business. To be sure, even under a contributory plan the employer usually can terminate his own payments into the fund.

The contributory pension relieves the employer of a part of the expense, and at the same time encourages self-dependence among the employees by putting upon them a part of the responsibility for their own future support. When the contributory pension takes the form of insured annuities, the company is relieved of the necessity of maintaining a large cash reserve for the payment of pensions and, at the same time, by following a pay-as-you-go policy, the employer avoids the danger of incurring future obligations of unknown amount.

Contributions from employees can be graded upward with the age at which an individual enters the service, and thus an employee taken on at mature age can be required to make provision for his own support after retirement. A provision of this kind makes it easier for a company to dispense with maximum age limits for hiring.

Arguments against Contributory Pensions. Against these arguments in favor of contributory pensions there are practical considerations which thus far have limited the adoption of this form of retirement plan. A contributory pension plan, of the type in which the money of employer and of employees goes into a common fund, involves contractual rights. With the first dollar contributed by employees the employer loses his privilege of paying or withholding pensions as he will; he is dealing with money that is not his own. The cautious manager hesitates to incur this contractual obligation, especially since it carries with it the practical necessity either to reinsure the pensions or to take money out of the business for the maintenance of a reserve adequate

for future incurred liabilities. True, he ordinarily does not expect to withhold pensions—sometimes he is not so very sure that he could do this lawfully even under a non-contributory plan—but he has an instinctive reluctance to enter upon a definitely enforceable agreement.

The industrialist believes that a contributory pension plan, to be effective, should be participated in by all employees. Otherwise the very ones who were most in need of protection would reach old age with no provision for their support, and the problem of superannuation would remain unsolved. Many managers consider that universal participation in a contributory plan would involve compulsion, and they hesitate to require contributions from manual workers.

Still another objection concerns the element of cost. A contributory pension, with its contractual obligations, involves the absolute safeguarding of pension rights. This seemingly can be done in one of two, and only two, ways: by setting up reserves, outside the business of the employer, which are actuarially sufficient to make the plan solvent, or by reinsurance. Either alternative involves the investment of large sums at low rates of interest—presumably far below the return which the employer would expect the same sums to earn in his own business. Over a long period of years this difference in the earning power of money might become a factor of much importance.

Extent of Pension Benefits. Decision between contributory and non-contributory pensions, and determination of the appropriate magnitude of annuities, may be facilitated by recalling the purposes for which pensions are paid. Since the primary reason for superannuation retirement is to increase the efficiency and the profits of the business by removing aged employees from the active pay roll, the employer should bear the expense up to the point at which this purpose is accomplished. Beyond this point old-age support, if furnished within the industry at all, should be looked upon as a responsibility of the employee himself. This means that the employer, if he chooses to retire aged employees, should provide at his own expense annuities which will permit of their retirement on terms conforming to business ethics and approved by public opinion. More than this he should not pay, since then he would be giving away stockholders' money without benefit to its owners and without moral obligation to do so.

Determination of the exact amounts that meet the requirements just stated, in a particular company or for individual beneficiaries, is more difficult than is the formulation of the general principle. Ordinarily the employer should be guided by cost of living in the community and by standards established by pension plans in general, including those of other companies, with whatever aid is furnished by his own sense of fairness and his own understanding of the needs of retired workers. It should be remembered, however, that the standards established by industrial practice, and enforced by public opinion, are subject to change. At present an annuity equivalent to 1 per cent of final annual earnings, multiplied by the employees' years of service, is generally approved as adequate, especially if there is an established minimum which represents the requirements for existence. If the pension is based upon total earnings rather than upon final earnings, the percentage

presumably should be increased. Some time in the future this standard may be raised, through the advancing public recognition of the employer's obligation to his worn-out workers; or, conceivably, it may be lowered, if the cost of living is further reduced or if pension expense becomes an excessive charge upon industry.

Shall the Employee Also Pay? Whatever may be the exact method of computing the annuity, one thing is certain: the ordinary non-contributory pension under present day industrial conditions will not be adequate for a comfortable living in the case of the lower-paid employees. Some employers whose plans are fully approved by public opinion frankly admit that they are paying "poorhouse pensions"—nothing more. It is highly desirable therefore that employees be encouraged to provide supplementary income for their own old age. This income may be furnished through contributory pensions, through insured annuities, or through savings plans. Payments of employees toward retirement funds, if possible, should be substantial enough to insure incomes which when added to the pensions paid by the employer will provide adequate support for the beneficiaries and their dependents. At the same time workers should not be encouraged to save to an extent that will cause them to neglect their families or seriously cut down their standards of living. Except for the lowest paid workers and those suffering unusual hardships in the way of illness or unemployment, it should be possible to fulfil both these requirements.

Along with the pension paid for by the employer, therefore, may properly go a supplementary plan financed by contributions of the employees. This plan may take the form of insured annuities, or of any of the other types of contributory pension available for an industrial group. Somewhat the same purpose may be secured by a savings plan, a stock plan, or an investment trust, provided that the safety of principal is sufficiently safeguarded and that at least a considerable portion of an employee's deposits are retained until he reaches retirement age or leaves the service of the company.

Participation in the supplementary plan may be either compulsory or voluntary; there are good precedents for each method. When the employer pays a pension sufficient to warrant retirement, however, the compulsory provision seems less important than in the old type of contributory pension plan in which the worker either participated or received no pension at all. In some states there is doubt as to the legality of enforced contributions from wages. Some companies encourage participation in the supplementary plan by increasing the non-contributory annuities to those who provide retirement income for themselves.

Terms of Pension Plans. Having decided whether the pension shall be contributory or non-contributory, the company next faces the task of settling upon the other terms of the agreement and drawing up the detailed retirement plan. Here much aid is available from plans of other companies, some of which furnish precedents for almost any arrangement the manager may have in mind. It is wise to study a rather wide range of existing plans and if possible to secure information bearing upon the experiences of the sponsoring companies in administering them. The manager may also find it advisable to call in expert help, from within or without his organisation, before com-

mitting the company to a particular form of pension plan. A pension is a long time arrangement and mistakes once made are difficult to correct.

Detailed discussion of all the terms of a pension plan is beyond the scope of this chapter. Only a few of the most important points will here be covered.

Age and Service Requirements. Pension plans ordinarily provide for retirement, either voluntary or compulsory, at a fixed age and after a specified term of service. The age is usually sixty-five or seventy years and the term of service is seldom less than twenty years. Some plans provide that retirement shall be optional, on the initiative of the company, of the employee or of either, at the age of sixty-five, and that it shall be mandatory at seventy. Frequently a lower retirement age is prescribed for women than for men.

In a simple non-contributory pension it seems reasonable to set a high age for automatic retirement, or none at all, and to give the company a large measure of control over optional retirement at lower ages. Since the company is paying the entire cost of pensions, it is justified, within reasonable limits, in retaining a man in active service after he has passed the minimum retirement age or in retiring him at the earliest possible date, depending upon the value of his services. Few employees wish to retire on pensions as long as they can retain their full wages, and the company is not likely to be criticized for holding men on the active pay roll beyond the time at which they might be retired. In this as in everything else connected with pensions, however, absolute frankness and scrupulous fulfillment of all obligations is essential. If the terms of the plan permit a man to retire at a certain age and he wishes to do so, it is obvious that he should not be compelled to remain in the service.

If the pension plan is a contributory one, the employee's right to retire, or at any rate to begin drawing his annuity, when he has fulfilled the prescribed conditions, should be inviolate.

Usually the pension is graded in accordance with length of service. This policy probably is in part a survival of the old notion that a pension was "earned." Whatever its origin, the practice of basing pensions upon length of service has sound justification in public opinion, which rightly or wrongly is reluctant to sanction equal awards to a man who has spent forty years in his employer's business and to one who has barely completed the pension requirement of twenty or twenty-five years.

Credit for Past Services. Much variation in policy exists as to giving credit for former service when an employee who has once left the company returns to its rolls. Some pension plans give credit for total service regardless of the number or the duration of breaks; others consider only the last continuous period of service, while in still others service breaks of limited duration are permitted. There are arguments for and against all three of these practices. Probably the preferable method is to permit breaks in service for reasonable periods (for example, eighteen months or two years) and to require an employee rehired after a longer absence to begin building up his pension credits over again.

Perplexing problems sometimes arise in computing pension credits of employees of plants or companies taken over by or merged with a corporation

that has a pension plan. Some companies in this situation allow no credit for services rendered to a predecessor concern, holding that the service of employees for pension purposes begins at the time the unit was acquired. Others allow full credit for service in the acquired plant or company. Still others attempt various compromises, sometimes on the basis of persuading the former employer to assume some or all of the pension obligation.

Probably no invariable rule can be laid down to cover these cases. It should be remembered, however, that employees of acquired properties will in time reach ages when their continued employment will be unprofitable, and that it will then be to the advantage of the existing management to place them on the retirement list. If no provision for annuities has been made, the employer will not escape public criticism simply because sometime in the past the men worked for a former owner of the plant.

Pensions for Disability. Many plans, in addition to retirement at a fixed age and after a definite term of service, provide for earlier retirement if the employee becomes physically or mentally incapacitated for his work. Terms of pension plans in this respect show wide variations and there is little agreement either as to the degree of disability or as to the minimum length of service that will render an employee eligible to a pension. In the present status of pension finance it is probably safer not to put disabled employees on the pension roll until after considerable service coupled with a reasonably mature age, (for example, fifteen years' service and fifty years of age), and to take care of other disability cases through mutual benefit associations, group disability insurance, or in some other way. The term "disability" should be interpreted somewhat strictly and not stretched to cover ordinary inefficiency.

Prorated Pensions. Some companies have experimented with reduced pensions for employees who have to be retired within a few years of qualifying in point of age and service. If a man is retired at sixty-two, for example, when the regular retirement age is sixty-five, he may be paid a pension based upon his attained age and service, but prorated over his longer life expectancy. A provision of this kind is especially useful when a company finds it necessary to shut down a plant and thus release long service employees.

If provision for prorated pensions is included in the plan, however, its application should be limited to employees who are comparatively close to the age and service requirements for regular pensions. Younger employees or those of less service, if necessarily laid off, can better be indemnified through dismissal compensation.

Awards Based upon Earnings. Nearly always pension payments bear a relationship not only to length of service but to the earnings of the individual during his active years. The variation in accordance with earnings is based upon standards of living. The physical needs of a common laborer and of a vice president may be much the same; it may take as much food to nourish one as the other, but in terms of practical possibility their living requirements are vastly different. An attempt to pension high salaried officers upon allowances suitable to the needs of laborers will simply mean that in many cases the highly paid man will not be retired at all and the pension will thus defeat its own purpose.

Maximum and Minimum Pensions. But in thus grading pensions according to past earnings, many companies have found it advantageous to set minimums below which no pension shall be allowed to fall and maximums beyond which none shall rise. The minimum is ordinarily fixed at a figure which is supposed to represent about the least upon which the retired worker can exist. Its justice and its usefulness in carrying out the purpose of a pension plan are too obvious to need defense. As to the desirability of an absolute maximum there is considerable disagreement in theory and in practice. Some companies pay no pensions exceeding \$1,200 a year; in others high officials may retire on annuities of \$50,000 or \$75,000.

Seemingly the best of the argument is on the side of the maximum, which, however, should not be set so low that it will prevent the retirement of highly-placed men when they have passed their years of usefulness. The object should be to determine a top limit which will enable a pensioned official to live in ordinary comfort. Presumably he will wish to live on a still higher scale, but for this he should have made provision during his productive years. An annuity that allows of luxurious living standards becomes actually a bonus and finds justification, if at all, on some other theory than that which underlies pensions.

A management which for reasons of policy hesitates to set a horizontal limit expressed in dollars can achieve somewhat the same result less drastically, and perhaps at the same time avoid the necessity of a fixed minimum, by adopting a graded annuity scale with the percentage basis diminishing in the higher salary ranges. For example, a pensioner might be allowed 2 per cent on his first \$1,000 of final earnings, multiplied by his years of service; 1 per cent on the second \$1,000; $\frac{1}{2}$ per cent on the next \$5,000 and $\frac{1}{4}$ per cent on all the remainder.

Final Earnings or Total Earnings. Most pensions in American industrial companies are computed on the basis of "final earnings"; that is, the wages or salary of the employee during the last five or ten years of his service. An alternative method is to figure the pension on the basis of the remuneration received by the employee during his entire active period. In favor of this method, which is in common use in England, it is argued not only that it may reduce pension disbursements (although it does not necessarily do so, since the percentage rate or other elements of the computation can be altered) but that it partially takes the place of a maximum limit, since the high salaried men usually are the ones whose earnings have increased periodically up to their time of retirement.

The principal claim for this method of computation, however, is that it facilitates actuarial estimates of pension liabilities. The actuary can figure just what liability has been incurred this year for pensions to active employees on the basis of this year's earnings; he can only guess at what the earnings will be twenty-five or thirty years in the future.

In spite of the impressive arguments in favor of the entire compensation method of computing pensions, most industrial managers incline toward the more ordinary practice of basing pensions upon final earnings and thus bringing them more nearly into line with the cost of living at the time the employee goes on the pension roll. Whatever may be the respective merits

of final compensation or total compensation as the basis of figuring pensions, the company adopting a pension plan should make a clear distinction between the two methods and understand accurately just what is involved in the choice of the one or the other.

Cost of Industrial Pensions. Most of the earlier pension plans were adopted with no definite provisions for meeting the financial obligations entailed and with no clear understanding of the future extent of pension disbursements. In recent years much attention has been given to the financial side of the pension problem.

Before adopting or revising a pension plan it is important to secure actuarial data showing as accurately as possible what will be the cost of pensions, not only in the next five or ten years, but in the next three or four decades. This preliminary estimate should be rechecked from time to time in the light of actual experience.

Methods of Meeting Obligations. With the cost of pensions once determined, the next decision involves ways of meeting the financial obligation. Six principal methods are in use. Some companies simply pay retirement allowances as a part of current operating expense, making no provision for meeting future obligations. Others "fund" the pensions already granted by setting aside sums sufficient to pay them during the expected lives of the pensioners. Sometimes a fund is set up, either when the pension plan is started or at some later period, from which the income is expected to be sufficient to pay pensions for an indefinite time. Some companies, instead of setting up a large reserve all at once, turn into the pension fund a definite percentage of the active pay roll each year, depending upon the amount thus accumulated, with interest, to carry the pension over the "peak" which is expected to be reached in the future. In other cases the company pays into the pension reserve each year a sum actuarially computed to be sufficient to cover the pension liabilities accruing during that year on account of employees on the active pay roll. The sixth method of financing pensions is through insurance, usually by some modification of the ordinary purchase of annuities.

When a pension fund is set up by the company there is a further choice between making it a "paper" reserve on the books and taking the money actually out of the business and putting the cash or securities into the hands of trustees.

Importance of Security. In the case of contributory pensions, the employer has no option but to make at least the employees' funds secure beyond all question, either through a trust agreement or through insurance. Even in non-contributory pensions the present tendency is in the direction of actual or approximate solvency. Some companies have protected non-contributory pensions by the creation of funds actuarially sufficient for accrued and accruing liabilities, while others are gradually building up their reserves with that ideal in view.

While it can scarcely be asserted that an actuarially solvent fund is an absolute essential of a non-contributory pension, the company operating or contemplating a pension plan should give much attention to the financial aspects of its obligations and should make its plan as secure as conditions warrant.

METHODS OF FINANCING PENSION PLANS

BY GILBERT E. AULT, *Associate Actuary, Woodward, Fondiller and Ryan*

The adoption of a pension plan in which all or part of the cost is borne by the employer places upon the particular industry a definite liability in the nature of an obligation to pay the benefits promised. The methods which have at one time or another been employed for financing this liability differ chiefly in accordance with the concept of what portion of the total liability has already accrued to date. They range all the way from the so-called cash disbursement method to the permanently endowed plan. The former method provides no reserve fund whatever out of which to meet the steadily increasing payments to retired employees. It recognizes no pension liability except as the payments to pensioners actually become due. It claims for itself financial solvency so long as there are sufficient funds on hand to meet these payments. The latter method attempts to finance once and for all the entire pension liability not only for existing employees but also for every employee who may enter the service throughout the future. The method claims financial solvency so long as the income from the endowment is sufficient to meet pension payments.

It is generally conceded that neither the cash disbursement method nor the permanently endowed plan are satisfactory methods of financing pension benefits, though there exists a wide divergence of opinion as to the particular intermediate method which best solves the problem. It is quite probable that there is no single best method. The method which best suits one case may not be the best method in another case. Much depends upon the financial requirements of other projects and the probable incidence of the future ability to meet the pension liability. It may well be that the needs of Company A, for example, will best be served by a method producing a cost which when expressed as a percentage of the payroll will increase slightly for a number of years. Company B, on the other hand, may be better served by a method producing a cost which will decrease for a number of years. The pension liability of Company C, however, may be best financed by a level percentage of the payroll.

Basic Precautions. Regardless of the particular method of financing adopted and regardless of whether the plan is reinsured or not, it is important to observe the following precautions:

1. Careful computations should be made to determine not only the current cost expressed as a percentage of the payroll but also the probable cost ten, twenty and thirty years hence.
2. A revaluation of the liabilities already accrued under the particular method should be made every year.
3. Every five years a detailed investigation should be made of the actual experience as regards important factors such as salary increases, rates of withdrawal from service, rates of retirement on pension and rates of mortality both during active service and subsequent to retirement.

Where pension costs for one reason or another show a distinct tendency to increase or decrease from year to year, it is of vital importance that the

employer be fully informed as to the probable future trend in the cost under the particular method adopted. The computations should involve all pertinent factors including the rate of withdrawal from service, the probable future increases in salary and the rate of retirement on pension, even though the plan be reinsured with an insurance company.

Methods of Financing. Five of the available methods of financing intermediate to the cash disbursement method and the permanently endowed plan are given in order below:

1. Financed at *retirement* on pension.
2. Financed by *single* premium group annuities.
3. Financed by *level* percentage of payroll.
4. Financed by *annual* premium group annuities.
5. Financed at *appointment* to service.

The above methods have been arranged according to the extent to which they build up a reserve fund out of which to meet the steadily increasing payments to pensioners. The first method builds up a relatively small reserve while the fifth method builds up a relatively large fund.

As regards the probable future trend in the cost, the first two methods will normally produce a cost which may be expected to *increase* steadily for a number of years, with the cost under the first method tending to increase over the longer period and reaching ultimately a higher percentage of the payroll. The last two methods, on the other hand, will normally produce a cost which may be expected to decrease steadily for a number of years, with the cost under the last method tending to decrease for the longer period of years and reaching ultimately a lower percentage of the payroll. The third method is designed primarily to produce a cost which will as nearly as possible remain a level percentage of the payroll under varying conditions of growth.

Under each of the two group annuity methods the amount of the annual pension is based on the average salary during the entire term of active service. Under the remaining three methods the annual pension may also be based on the average salary during the entire term of active service though it is more frequently based on the average salary during the last five or ten years of service or even on the final salary.

Financed at Retirement on Pension. This method recognizes no pension liability prior to the time of retirement on pension. The liability assumed at that time is the then present worth of the probable future payments to be made in respect of the particular retirement. This sum may be retained under the control of the employer or it may be turned over to an insurance company. In the latter event the mortality risk after retirement is transferred from the employer to the insurance company which undertakes to meet the pension payments as long as the retired employee may live.

This method is but little better than the cash disbursement method. Costs thereunder show a distinct tendency to increase. The pension liability for a particular group of employees is financed out of corporate earnings produced by other employees rather than out of corporate earnings produced by their own services.

Financed by Single Premium Group Annuities. This method is usually associated with a pension plan which is reinsured with an insurance company, though it was adopted by a large self-administered plan without the reinsurance feature. The usual single premium group annuity contract provides that the employees make contributions which are expressed as a level percentage of the salary. These contributions are applied each year at the employee's attained age to purchase single premium deferred annuities. The employer then purchases for each employee additional single premium deferred annuities in sufficient amounts to make the total deferred annuity purchased each year equal to a fixed percentage of the employee's salary for that year. The method is predicated on the following reasoning:

1. That the liability incurred during each year of service is the single payment required to provide for the pension earned during that year.

2. That since the pension is expressed as a percentage of the average annual salary during the entire term of service multiplied by the number of years of service, the pension earned during each year is that same percentage of each year's salary.

3. That even though the pension costs for individual employees increase substantially toward the older ages and longer terms of service, the average cost for all employees combined will remain practically constant provided the present distribution by age and term of service is maintained throughout the future.

The portion of the total pension liability assigned to each year of service may be measured by the relative cost per dollar of pension purchased in the respective years. On this basis a relatively small portion of the liability is assigned to the earlier years of service, while the major portion is assigned to the later years of service immediately preceding retirement. This is true not only on an employee basis but also on a salary basis.

The cost of individual annuities increases with the advancing age and term of service. As the employee grows older, the time of retirement on pension approaches ever nearer and naturally the single premium per unit of pension purchased increases for both the employee and the employer. The employee's contribution, however, remains a level percentage of his salary, so that the entire increase in cost is borne by the employer, thereby accentuating the increasing trend of the employer's cost. From another point of view, the employee's level contribution will, because of his advancing age, purchase a decreasing portion of the total deferred annuity purchased each year. This leaves an increasing portion to be purchased by the employer. The increasing trend in the cost is, therefore, relatively greater than it would be if the entire cost were borne by the employer.

Another factor influencing the trend in the employer's cost is the rate of withdrawal from service. When an employee leaves the service by reason of resignation or dismissal, the accumulated contributions made by the employer are refunded. This reduces the cost otherwise borne by the employer. The interesting point, however, is that this reduction in the cost actually accentuates the increasing trend. The withdrawal credit for each employee leaving the service will, of course, be greater at the longer terms of service. The rate of withdrawal, on the other hand, shows a marked tendency

to decrease with term of service. In most cases, this decrease in the rate of withdrawal is sufficient to counter-balance the increasing credit per withdrawing employee and produces a total withdrawal credit which, when expressed as a percentage of the cost otherwise borne by the employer, actually decreased with the term of service.

Summarizing, we find that each of the following three factors cause the employer's cost to increase either with the advancing age of the employee or with the advancing term of service:

1. The single premium per unit of deferred annuity purchased increases with advancing age.
2. The employee's level percentage contribution purchases a decreasing portion of the total annuity purchased each year leaving an increasing portion to be purchased by the employer.
3. The withdrawal credit, when expressed as a percentage of the cost otherwise borne by the employer, usually decreases with the term of service.

The employer should be fully informed not only as to the current cost for the first year the plan is in operation, but also as to the probable cost ten, twenty and thirty years hence. Detailed computations should be made to determine the probable future trend in the cost expressed as a percentage of the payroll. As already explained, the method produces costs which are relatively low at the younger ages and at the shorter terms of service, but which increase to a marked extent toward the older ages and longer terms of service. The aggregate cost for all employees combined depends, therefore, on the distribution of the employees according to age and term of service. As the particular business grows older and more stabilized there is an inevitable shift in the employees to the older ages and longer terms of service. Under these conditions the future cost, expressed as a percentage of the total payroll, will increase steadily for a long period of years before tending to stabilize. In some typical instances detailed computations indicate that the average percentage cost for all employees combined will eventually reach a figure more than double the initial cost.

The insistence that new employees be hired at the younger ages to the exclusion of the applicant over forty or forty-five, is, at best, only a temporary expedient. In periods of rapid expansion it may, for a time, be possible to hire younger employees in sufficient numbers even to reduce the average age and term of service of the entire group. To continue such a program indefinitely, however, would mean not only an ever increasing number of new employees each year but also in many cases an ever increasing rate of growth in the total number of employees and possibly a further reduction in the maximum hiring age.

Such computations of the probable future trend in the cost necessarily involve both the rate of increase in salary and the rate of termination of service by withdrawal. Neither of these factors may be determined with that high degree of preciseness which may be attained when dealing with mortality rates. Even though there is the inherent risk of finding that the future experience differs from the assumed rates by as much as twenty or

twenty-five per cent it is preferable to determine these factors on the basis of the past experience of the particular group with suitable adjustments in the light of changed conditions rather than err one hundred per cent by ignoring them entirely. The insurance companies can not, of course, go so far as to guarantee to the employer that the actual increase in cost will be within the estimates submitted in advance.

Financed by Level Percentages of Payroll. This method approaches the problem from the point of view of establishing a control over the trend in pension costs on a basis whereby costs are maintained at an equable load from year to year under varying business conditions. With the continued growth of the company, or more so, for variations in its growth there will be for many years a pronounced change in the distribution of employees by term of service. Accordingly, the cost of the benefits promised is evenly distributed throughout active service as a level percentage of salary. By thus establishing the pension costs independent of term of service, we are enabled to maintain the future costs at an even percentage of future payroll under wide variations in the growth of the company.

As regards the distribution according to age at employment, there is usually a slight tendency of a shift toward the younger ages at employment. This can have but little effect on the average cost for all ages at employment combined, however, since the level percentage cost for most plans will vary little from the younger ages at employment to the older ages. The somewhat wide variation frequently shown is more apparent than real in that it arises from the particular method of computation usually adopted. The method in question involves the construction of a single set of basic tables based on attained age only, whereas the more scientific but laborious method involves the construction of several such sets of basic tables for selected ages at employment. While such a short-cut method can be made to produce substantially accurate results for all ages at employment combined, it fails utterly to produce accurate results for individual ages at employment. The method understates the cost for the younger ages and overstates the cost for the older ages.

Incidentally, the more laborious computations for selected ages at employment show that industrial employees entering the service between ages 40 and 50 or even 55 can be provided with quite substantial pension benefits without any material increase in the average cost. There is, therefore, no real justification for the common practice of refusing to consider applicants over 40 or 50 on the mere grounds that the pension costs will be unduly increased by the inclusion of such applicants.

The level percentage method definitely recognizes in advance that a large proportion of the employees will leave the service and hence will never be retired on pension. The cost is computed on the basis that when an employee does leave the service, the employer's accumulated contributions shall remain in the fund. Consequently there is no refund to the employer in the nature of a withdrawal credit as is the case under either the single premium or annual premium group methods commonly employed when the plan is reinsured. The reduction in the cost by reason of withdrawals is reflected directly in the level percentage figure.

One objection frequently made to the level percentage method is that the continued application of a predetermined percentage may result in a material accumulation of errors over a period of years. This objectionable feature may be avoided, however, by making annual revaluations of the pension liability and then computing the annual cost as the amount required to maintain the accumulated funds in line with the computed liabilities. The annual cost would be obtained as follows:

Add:

1. The increase in the pension liability during the year as disclosed by the annual revaluation.
2. Pension payments made during the year to disabled and retired employees.

Deduct:

1. Interest earned during the year on the portion of the pension liability already funded.
2. Interest at . . . per cent for the year on the portion of the pension liability *not* then funded. (The rate of interest which should be used for this item is the rate assumed in the construction of the valuation factors and percentage cost factors.)

The annual cost computed in the above manner may be said to represent the *actual* pension costs in respect of service rendered during the year. The predetermined percentage cost, on the other hand, may be said to represent the *expected* pension costs. This is what the *actual* cost would be if the experience of the pension plan as regards withdrawals, mortality, retirements, salary increases, etc., were always in exact agreement with the fundamental factors adopted. Any wide divergence between the *actual* cost and the *expected* cost will indicate that the experience of the pension plan during the particular year is not in sufficiently close agreement with one or more of the fundamental factors. A further study should then be made to determine which factors are out of line and whether the lack of agreement is due to some cause peculiar to the particular year or to some cause which is likely to be present in the future to an extent sufficient to warrant adjustments in the valuation factors and percentage cost factors.

The *actual* cost by the above method is not disclosed until some time after the end of the year when the annual revaluation is completed. It is frequently desirable, however, to know the pension costs in advance and month by month, especially if monthly statements are being compiled. The *expected* cost based on the predetermined percentages is of value at this point in that it indicates in advance the probable pension costs. The necessary adjustment in the pension costs is then disclosed by the valuation as of the end of the year and may be financed as follows:

1. The adjustment may be absorbed immediately in one sum, or
2. The adjustment may be spread evenly over the following twelve months,

or

3. If the adjustment is unusually large because of accidental variations in the actual experience as regards withdrawals, mortality, retirements, salary increases, et cetera, the adjustment may be spread over a period of years and financed as a part of the initial pension liability still remaining to be funded.

Financed by Annual Premium Group Annuities. This method is still occasionally adopted when a pension plan is reinsured. It differs from the single premium group annuity method in that it produces a larger accrued liability and a pension cost which decreases with term of service instead of increasing. Under this method a deferred annuity based on the current salary and the number of years which will have been served upon the attainment of a designated retirement age is purchased by means of level annual premiums payable until the retirement age. As the salary increases, additional annual premium annuities are purchased at the attained age with the amount of the additional annuity based on the increase in salary and the number of years still remaining to the retirement age. When the employee leaves the service by reason of resignation or dismissal, the accumulated contributions are refunded to the employer as a withdrawal credit.

It should be noted that the basic cost under this method is a level annual premium, and hence the full amount of any dividends or withdrawal credits is applied toward producing a cost which will be lower than the indicated initial cost. The situation is much different from that under the single premium group annuity method where the basic cost is of an increasing nature.

The method has seldom proved to be popular with the employer, because of the relatively large accrued liability and the relatively high initial cost. Nor has he been greatly encouraged by the assurance that pension costs in the future would, by reason of dividends and withdrawal credits, be less than the indicated initial cost.

Financed at Appointment to Service. This method, while not so ambitious as the permanently endowed plan, does place on a rapidly growing industry an unnecessarily severe financial strain at the very time when funds are most needed for expansion purposes. The method undertakes to finance each year the entire pension liability in respect of all employees entering the service during that year. In order to avoid the gradual development of embarrassing situations, it is extremely important under this method that the pension liability be revalued yearly so that frequent minor adjustments may be made in the accumulated reserve fund. The method is defective, however, in that the pension liability for a particular group of employees is not financed out of corporate earnings produced by their own services, but rather out of corporate earnings produced long before by other employees.

Summary

1. Under any method of financing a pension plan, the employer should consider the entire liability assumed; not only the portion recognized by the particular method adopted as already having accrued by reason of past service, but also, what is sometimes even more important, the portion which remains to be incurred during the years to come.

2. The methods which have at one time or another been employed for financing the benefits promised differ chiefly in accordance with the concept of just when the pension liability is actually incurred and hence what portion of the total liability has already accrued by reason of past service.

3. Some of the more usual concepts of when the liability is actually incurred are reflected in the following methods of financing the benefits:

- a. Financed on a *cash disbursement* basis.
- b. Financed at *retirement* on pension.
- c. Financed by *single* premium group annuities.
- d. Financed by *level* percentage of payroll.
- e. Financed by *annual* premium group annuities.
- f. Financed at *appointment* to service.
- g. Financed as a *permanently endowed* plan.

The method usually adopted in the case of a reinsured pension plan is the single premium group annuity method. In the case of the industrial plan which is not reinsured, the level percentage of payroll method is the recognized standard of solvency.

4. The single premium group annuity method of financing approaches the problem of the liability incurred each year as follows: It first assumes that the pension earned during each year of service is proportional to the salary received in that year. It then considers the liability actually incurred during the year as being equal to the single payment required to finance the pension thus earned. The method entirely ignores the resulting trend in pension costs expressed as a percentage of the payroll.

5. The level percentage of payroll method of financing approaches the problem of the liability incurred each year from the point of view of establishing a control whereby pension costs may be maintained at an equable load from year to year under wide variations in the growth of the company. It considers the liability incurred in each year of service as being basically proportional to the salary earned in that year and hence expresses the expected cost as a level percentage of the salary. The actual cost is then computed as the amount required to maintain the accumulated assets in line with the accrued liability as disclosed by annual revaluations. The actual cost should depart from the expected cost only to the extent that the experience as regards withdrawals, etc., during the particular year departs from the assumed factors.

6. Some concepts of just when the pension liability should be incurred produce pension costs which when expressed as a percentage of the payroll show a distinct tendency to increase from year to year. Others produce costs which show a marked trend downward. Then there is one which is designed primarily to produce costs which will as nearly as possible remain a level percentage of the payroll under wide variations in the growth of the company.

7. Where pension costs for one reason or another show a distinct tendency to increase or decrease from year to year, the employer should be fully informed as to the probable future trend in the cost under the particular method of financing adopted.

8. The computations of the future trend in cost to be expected should involve all pertinent factors including the rate of withdrawal from service, the probable future increases in salary, the rate of retirement on pension and the rate of future growth where the particular method adopted is such that future costs will be affected by the growth of the company.

FINANCING PENSION PLANS

BY JOSEPH H. WOODWARD, *Consulting Actuary, Woodward, Fondiller and Ryan, together with introductory comment* BY GILBERT E. AULT, *Associate Actuary of that firm*

Introductory Comment. The application of formulae and tables to a specific problem without full knowledge of the underlying assumptions involved is usually fraught with danger and quite frequently produces results so far off the mark as to be of no value whatever. Pension problems run true to form in this respect. It seems advisable, therefore, to preface Mr. Woodward's article on "Financing Pension Plans" with a word of caution and to point out briefly some of the pitfalls to be avoided.

The formulae and resulting tables in Mr. Woodward's article are based primarily on attained ages in order to reduce to a reasonable basis the otherwise extensive numerical computations when applied to smaller groups of employees. While certain important factors which affect pension costs and pension liabilities depend almost entirely on the attained age of the employee, there are other equally important factors which depend more on term of service. In most cases, however, these factors can be transposed to an attained-age basis without vitiating the final results to any appreciable extent. The salary scale and rate of withdrawal, for example, depend more on term of service than on attained age and for most groups of employees can be analyzed satisfactorily only on a term-of-service basis for selected age-at-employment groups, preferably five year age groups. The transition from a term-of-service basis for each age-at-employment group to an attained-age basis for all ages at employment combined requires due regard for the age-at-employment distribution of the particular group of employees and often taxes the skill of experienced actuaries.

Where the number of employees involved is sufficiently large to warrant the greater expense entailed, it is usually advisable to make separate computations for each age-at-employment group, at the same time distinguishing between male and female employees. Such a procedure naturally increases the numerical computations several fold. At the same time, however, it eliminates entirely the need for the above mentioned transition from factors on a term-of-service basis to an attained-age basis and produces correspondingly more dependable final results. The necessary modifications in the formulae given on the attained-age basis in order to obtain formulae on the term-of-service basis are quite simple and may readily be made when one once understands the basic development of the formulae given.

Another point to be noted is that while the shorter method may be relied upon to give satisfactory results in the aggregate, it is only in relatively few cases that the method produces satisfactory results for component parts of the whole. More specifically, the method when properly applied to a particular group of employees will produce dependable pension costs for all employees combined, but at the same time greatly understates the pension costs for those entering the service at the younger ages and correspondingly overstates the pension costs for those entering at the older ages. This peculiarity of the

method has to a great extent been responsible for the erroneous belief that those entering service at the older ages represent an undue proportion of the total pension costs and should therefore be excluded if aggregate costs are to be kept at a reasonable level. For purposes of illustration, Table II_a shows that on the basis of the so-called "high rate of withdrawal" the pension cost for retirement at age 65 increases from 21 cents per \$1,000 of salary for age at employment 15, to \$2.09 for age at employment 25, to \$12.69 for age 35, to \$36.30 for age 45 and to \$51.83 for age 50. Table II shows the corresponding pension costs on the basis of the so-called "low rate of withdrawal" to be \$4.11, \$10.00, \$22.12, \$41.10 and \$54.19 respectively. Even on the basis of low rate of withdrawal the increase is more than 10 fold. When, however, computations are based on a term-of-service basis for each age-at-employment group, we often find that for male employees the pension cost for the older ages at employment is actually less than the cost for those entering at the younger ages. In the case of female employees where withdrawal rates are decidedly high at the marriageable ages, pension costs may show an increase of from 2 to 3 fold but nowhere near the 10 fold shown by the shorter method under the low rate of withdrawal. The increased cost at the older ages for females however is usually only slightly higher than that for male employees entering at the same age. This represents the net result of a younger retirement age and a lower rate of mortality among female pensioners partially offset by a higher withdrawal rate and a less steep salary curve for female employees, as compared with the corresponding factors for males. In one particular instance, for example, the pension costs for male employees were \$31.72, \$29.95 and \$28.47 per \$1,000 of annual salary for ages at employment 20, 30 and 45 respectively, a slight though definite decrease toward the older ages at employment. The corresponding pension costs for female employees were \$10.68, \$20.46 and \$30.98.

One further point to be borne in mind when considering pension costs is the payroll savings effected through the elimination by retirement of older inefficient employees. In the absence of a pension plan many employees for one reason or another are retained on the payroll long after their period of usefulness to the company and to that extent a portion of their salary constitutes a definite pension cost even though concealed in the regular payroll.

It is at this stage that management itself plays the most important part in the pension program. It is a problem of management to determine when and on what basis employees should be retired. Otherwise the pension plan may on the one hand be ineffective in weeding out older inefficient employees and on the other hand result in the retirement of many employees fully capable of rendering further periods of profitable service to the company. In either case aggregate pension costs will be unnecessarily high. Beyond a certain point any apparent reduction in pension costs under a too restricted scale of benefits will be more than offset by increased pension costs concealed in the regular payroll. Management can in many cases accomplish much toward the reduction of concealed pension costs by a carefully worked out program of retraining older employees and transferring them to work at which they may be continued in service for longer periods with reasonable profit to the company. To this extent the burden on the pension plan can be relieved

and aggregate pension costs including concealed pension costs as well as direct pension costs will be reduced.

This paper describes certain methods of computing the cost and calculating the necessary reserves to be set aside by the employer in connection with the usual type of non-contributory, non-contractual pension plans. In order to limit its scope no consideration is given to any questions of social and economic theory, nor does it attempt to deal with the contributory types of pension plans more often found in connection with groups of public employees or with the employees of financial institutions.

Characteristics of Existing Plans. The National Industrial Conference Board in its recent publication on industrial pensions¹ gives an analysis of 248 plans. Of these, 211 are non-contractual and non-contributory. Of the 211 non-contractual plans, 43 are of what is known as the limited contractual type; that is, a pension having been once granted may not be arbitrarily revoked or reduced. The non-contributory, non-contractual type of plan is thus seen to prevail by an overwhelming majority, and it is to this type that exclusive consideration is given in this paper.

The annual pension payable upon retirement is in nearly all cases a flat percentage—usually 1 or 2 per cent—of the "final salary" multiplied by the number of years of service. The final salary is usually defined as the average salary for the final ten years of service, although the final five years is in many cases specified. In a small minority of cases a percentage of the "total" salary for all years of service is granted which, as may readily be seen, is the same thing as a percentage of the "average salary" multiplied by the number of years of service. In rare cases a flat amount, such as \$40 per month, may be the benefit; or a flat percentage of the final salary, such as 50 per cent. The most usual pensionable age is sixty-five for men and fifty-five for women and at least twenty years of service are commonly required to establish eligibility to a service pension. A pension payable on the occurrence of permanent disability is often provided, usually after fifteen years of service. A death benefit is sometimes provided in the plan itself, sometimes through group insurance and sometimes through an employees' mutual benefit association. Ordinarily there are provisions for maximum and minimum limits for the benefit payable.

How Pension Plans Develop. During the early years of an industrial enterprise, very few employees become superannuated. With the lapse of time, however, the necessity arises for replacing the older employees with younger men.

As the pension list grows a formal system of rules governing the granting of pensions naturally comes into being. In formulating these rules, the rules of other industrial concerns are usually taken as a guide, special regard being had for enterprises in the same line of business, more especially if they happen to be so situated that they compete for employees in the same labor market. The final step in the development of pension plans is the realization

¹"Industrial Pensions in the United States," National Industrial Conference Board, New York, 1925.

that, unless properly financed, these plans involve an increasingly heavy financial burden.

This leads to a demand for financing upon an actuarial basis, a demand which has been further stimulated by recent contributions of life insurance companies to the solution of the pension problem by means of the issue, under a group arrangement, of various forms of savings or deferred annuity contracts.

Costs and Reserves. When an employer decides to determine actuarially the position of a pension system, he first asks two questions:

1. How much does the system cost?
2. How much are the liabilities assumed?

It is necessary to consider very carefully just what these questions mean.

How much should the accounts of the employer show as the true cost of the pension plan for any particular calendar year?

Let us start with the definition that the cost of a pension in the case of any particular employee is that level percentage of his salary which, accumulated at interest during his entire period of active service, will, taking into account the probabilities of death, disability, withdrawal from service and increase in salary, be exactly sufficient on the average to provide for a pension according to the rules.

When an employee leaves the service prior to retirement the fund accumulated for his benefit is, so to speak, "forfeited" for the benefit of those who remain in the service up to the pensionable age. Since only a very small percentage of employees spend all or most of their active life in the service of one employer it follows that the cost of a plan providing no withdrawal benefits is much less than the cost of a plan which permits withdrawing employees to take with them accumulations set aside on their behalf. It is, in fact, this great difference in the cost which is the principal obstacle to the adoption of contributory plans, since under a contributory plan equity requires that the contributions of the employee, with interest, should be returned to him on withdrawal from service.

Rarely, if ever, is provision for future pensions made at the starting of a new enterprise. For that reason it is necessary, at the time when the pension plan is first placed upon an actuarial basis, to find some method of dealing with the benefit which has accrued by reason of service rendered prior to the date of inception or reorganization of the plan. The actuarial liability on account of such service is defined as the "accrued liability."

The best method of dealing with this situation is to first compute the "normal cost" on the assumption that this normal cost has been set aside each year in the past since the date of entry into employment. The normal cost, as respects any employee, accumulated with benefit of survival in service up to the date of inception or reorganization of the plan, is then the accrued liability in respect of such employee.

The following table shows the normal cost for quinquennial ages at entry into service calculated on the assumption of a relatively low rate of withdrawal.

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NORMAL ANNUAL COST PER \$1,000 OF ANNUAL SALARY FOR ACTIVE EMPLOYEES

Pension at age 65 of 1 per cent of salary times years of service, interest, 4 per cent

Age at entry into service	Normal annual cost ¹
15	\$ 4.11
20	6.40
25	10.00
30	15.21
35	22.12
40	30.70

¹ As explained later, for a given employee the first payment of the normal cost is assumed to be made after the employee has been in the service two years.

Recently several of the larger insurance companies have become interested in the financing of pension plans. The general method they have followed is to sell to the employer a deferred annuity for each employee, such annuity to begin at the retirement age and to be for an amount determined according to certain rules stipulated in the original contract between the employer and the insurance company.

Where, however, the plan is "self-insured," the following table illustrates the reserves, calculated on the same basis as the normal costs previously given, required to be set up in respect to an employee who entered the service at age twenty.

AGE AT ENTRY INTO SERVICE, 20 YEARS	
Normal Annual Cost \$6.40 per \$1,000 of annual salary	
Number of years of service ¹	Reserve per \$1,000 of annual salary at end of indicated number of years of service
$\frac{1}{2}$	0
$1\frac{1}{2}$	0
$2\frac{1}{2}$	3
$3\frac{1}{2}$	11
$4\frac{1}{2}$	19
$14\frac{1}{2}$	182
$24\frac{1}{2}$	634
$34\frac{1}{2}$	1,567
$44\frac{1}{2}$	3,665

¹ It is assumed that an employee on the average enters service on June 30; hence at the date when valuations are generally made, Dec. 31, an employee has on the average one-half year of service to his credit for the first calendar year; one and one-half years of service for the next calendar year, etc. That is why reserves are given for half-years of service.

From the above table it is seen that for the first and second calendar years no reserve is set up but that at the end of the third calendar year of service a

reserve of \$3 is required for each \$1,000 of average salary during the past year. Similarly, at the end of the fourth calendar year \$11 per \$1,000 of average salary during that year should be on hand, etc., until the end of the forty-fifth year, when \$3,665 per \$1,000 of average salary is called for. This amount is calculated as sufficient to "purchase" the pension which under the rules would then be entered upon.

By applying a similar procedure to all employees the aggregate reserve may be readily calculated.

Due to the wide divergencies of withdrawal rates as between different enterprises it is indispensable that a separate investigation be made of the past experience of the individual enterprise whose pension plan is to be valued. Where it is impracticable to make such an investigation, either because the concern is new or because it has not kept employment records with the necessary details, or because it is unwilling to go to the necessary expense, then it is necessary to assume rates of withdrawal which appear conservative under the circumstances. From four to six years is usually a sufficient period to be covered in the investigation of experience.

For valuation purposes, whether the past experience is to be investigated or not, cards must in any event be written or punched for every active employee in service on the valuation date showing (1) year of birth, (2) date of entry into employment, (3) salary, and (4) sex, together with the particulars necessary for identification. Where the rate of withdrawal is to be investigated cards must also be punched or written for every employee whose service was terminated for any reason whatever during the period covered by the investigation showing (1) year of birth, (2) date of entry into employment, (3) date of termination of employment, (4) sex, and (5) mode of termination of employment (whether by withdrawal, death, disability, or retirement on pension).

Exposed to Risk. When an employee once enters upon a given year of service at a given age he is said to be "exposed to risk" for that year and for that age.

In calculating the exposed to risk an important point to be considered is the extent to which the data should be investigated by length of service in addition to age attained. Rates of withdrawal for any particular age are greatly affected by duration of service, even when the first two or three years of service are excluded.

In order to reduce the fluctuations arising from labor turnover and to eliminate from consideration employees whose connection with the company is hardly more than casual, a convenient device is to exclude the first two or three years of service and to assume that no accumulation of normal cost is to be commenced in respect to any employee until he has completed this preliminary term. By using this device, over 75 per cent of the labor turnover is eliminated entirely, and the investigation is confined to those employees who are most likely to remain in the service permanently.

After the exposed to risk has been computed for various ages the next step is the determination of the rates of withdrawal, mortality and disability. The number of withdrawals at age 20 during the period of the investigation may be represented by the symbol w_{20} , deaths by d_{20} and disabilities by r_{20} .

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To illustrate, assume that of 240 employees who completed their second year of service at age twenty, 30 withdraw during the third year of service. The rate of withdrawal at age twenty would then be defined as $\frac{30}{240} = 0.125$ per employee, or 125 per 1,000. Rates of mortality and disability are calculated in a similar manner using the actual number of deaths or cases of disability.

Unless the experience is very large the crude rates will be irregular and it is the practice to smooth them out or, as is technically termed, "graduate" them into a smooth series.

Rate of Withdrawal. The rate of withdrawal takes account of discontinuances for all causes except death, retirement on pension and permanent disability. Withdrawals fall into two classes: voluntary and involuntary. The voluntary group includes employees who leave the employment to seek altered or better working conditions. The involuntary group includes employees who have been laid off by reason of business depression. Where employees are involuntarily laid off in large numbers and the rules provide that, on return to work, credit will be given for prior service rendered, there may be considerable undisclosed liability for past service in connection with valuations made at the low point of an employment cycle.

For purposes of comparison the following graduated rates of withdrawal (excluding either the first two or the first three years of service) are given for decennial ages upon the basis of four different industrial experiences:

RATE OF WITHDRAWAL PER 1,000

Age	Company A	Company B	Company C	Company D
20	125	201	169	250
30	110	151	121	222
40	73	126	77	140
50	31	83	42	64
60	4	36	16	25

The differences in these rates are rather formidable and indicate what a wide range of conditions is likely to be met with. In the case of companies A, B, and C the rates are based on experience with the first two years of service excluded. In the case of company D the first three years of service were excluded.

The Rate of Mortality. Save where a very large experience can be investigated there is but little to be learned from the experience as to the probable mortality among pensioners or active employees. Except at the higher ages, however, rates of mortality have little effect, relative to other factors, on the cost of the pension benefit. Unless some special occupational hazard is present, the rates of mortality taken from a standard table, such as the American Men Ultimate Mortality Table, will be satisfactory. The following table illustrates these rates of mortality for decennial ages:

RATE OF MORTALITY PER 1,000
AMERICAN MEN ULTIMATE TABLE OF MORTALITY

Age	Number of deaths to be expected in one year per 1,000 employees at age given
20	3
30	4
40	6
50	12
60	27
70	61
80	136

The Rate of Disability. Due to the many interpretations that may be given to the term "total disability," it is difficult to come to any definite conclusions as to what rate of disability is likely to be experienced among a given group of industrial employees.

The rate of mortality among pensioners actually receiving a disability annuity is another troublesome point due largely to the difficulty in obtaining a sufficient exposed to risk. What we are really interested in in such cases is, of course, the total rate of termination of the benefit from both death and recovery. For practical purposes it is sufficiently accurate to use a standard disability table "loaded" to meet the conditions in the particular case.

Salary Scale. A salary scale may be defined as the ratio of the average salary at any age to the average salary at some specified age taken as a base.

The general characteristics of an industrial salary scale are a rapid increase at the younger ages, a slower increase at the middle ages and a comparatively stable salary for several years preceding the pension age. Due to the fact that in most pension plans the benefit depends on a percentage of the final salary, it is important to avoid too low a scale at the higher ages. A convenient method of expressing the salary scale is to express all salaries in terms of a salary of \$1,000 at age sixty-five. For example, if experience showed the average actual salary at age sixty-five to be \$2,100 and employees at age twenty-five received on the average \$1,050, then the salary scale would show a relative salary at age twenty-five of \$500.

For purposes of comparison the graduated salary scales for quinquennial ages are shown on page 1362, based upon the experience of the same four industrial enterprises for which rates of withdrawal have been previously given.

In general it will be found that the salary scale is not so much affected by duration of service as is the rate of withdrawal and it is doubtful whether, under ordinary conditions, it is worth while to investigate the salary by durations.

Most pension plans contain a provision for a maximum benefit, and in constructing the salary scale it is necessary to eliminate excesses of salary over amounts on which a pension benefit would be based. Care should also be

taken to provide uniform and consistent instructions as regards the conversion of daily or weekly wages into annual rates.

SALARY SCALE
(Per \$1,000 at age 65)

Age	Company A	Company B	Company C	Company D
15	\$ 170	\$ 210	\$ 220	\$ 380
20	370	570	340	500
25	550	780	480	670
30	720	900	630	770
35	850	960	760	820
40	930	980	870	860
45	960	1,000	940	880
50	980	1,000	980	910
55	990	1,000	1,000	970
60	1,000	1,000	1,000	1,000
65	1,000	1,000	1,000	1,000

Service Table. A service table in its relation to pension fund finance is analogous to a mortality table in relation to life insurance finance. A service table is like a mortality table except that it includes in addition to the mortality element the elements of withdrawal and disability. The salary scale is also usually considered as a part of the service table.

After the rates of withdrawal, mortality and disability, have been determined, the service table is constructed somewhat as follows: At a certain age of completion of the first two years of service, say fifteen, an arbitrary number of active employees—called the “radix” of the table—is assumed, say 10,000,000. Using Table I at the end of this article for illustration, we see that at age fifteen 128,769 will withdraw, 3,460 will die and 1,018 will become disabled per each 1,000 of employees aged fifteen. Hence for 10,000,000 we shall have 1,287,690 withdrawing, 34,600 dying and 10,180 disabled, or a total number of separations from active service at age 15 of 1,332,470. Subtracting this latter figure from 10,000,000 leaves 8,667,530 of the original 10,000,000 employees who will “survive” to age sixteen. This process is carried forward from year to year until at age seventy, 75,907 employees would, under the assumptions as to withdrawal, mortality and disability, survive in active service. The column showing how many employees are in active service at a given age x is usually termed the l_x column. For example, $l_{15} = 10,000,000$ and $l_{60} = 227,848$ in the specific table we have been using as an illustration. To find from our table how many employees would be in active service at age fifty where 3,270 for example had completed two years of service at age fifteen, it would only be necessary to multiply 3,270 by 227,848/10,000,000 giving seventy-five employees as the answer to the question.

Salary scales and rates of withdrawal show characteristic differences for male and female employees. Hence, where a large proportion of the employees are females it is essential that separate consideration be given the sexes throughout the investigation. This, however, doubles a large portion of the work, so that when the females are not many in number or when the element of expense has to be considered, the experience of both sexes may be combined and the results used to construct the service table without any great loss in accuracy. Most pension plans allow younger retirement ages for females than for males, and it is necessary in any event that this fact be given consideration in computing normal costs and reserves.

Age at Retirement. Employees are seldom retired at the specified retirement age, more especially where the retirement privilege is optional. A liberal pension benefit and low retirement age tend to increase the extent to which optional benefits are availed of. On the contrary, small pensions and a high pension age tend to increase the actual retirement age. The existence of a large group of employees with thirty or forty years of service to their credit would tend to reduce the average age at retirement.

By averaging the ages at which pensions have been granted in the past an average actual retirement age may be ascertained and pension costs computed on the basis that employees will be retired at that age. A more conservative method is to assume that all employees attaining the optional age will become pensioners at that age.

Formulae for Normal Costs and Reserves. The following is a brief description and explanation of the formulae for normal costs and reserves.

A formula for the normal cost expressed as a level percentage of the salary payable from age x (where $x - 2$ is the age at entry into service) of a pension at age sixty-five of 1 per cent of the final salary multiplied by the number of years of service, may be stated as follows:

$$100 {}^{65}P_{[x-2]+2} = \frac{s_{65} (65 - \overline{x-2}) \bar{a}_{65} v^{65-x} \frac{l_{65}}{l_x}}{.01 s_x {}^s\bar{a}_{x:65-x}|} \quad (1)$$

where

$100 {}^{65}P_{[x-2]+2}$ = normal cost expressed as a level percentage of annual salary.

s_{65} = Scale salary at age 65.

s_x = Scale salary at age x .

$[x-2]$ = Age at entry into service.

x or $[x-2]+2$ = Age two years after entry into service at which payments of normal cost begin.

\bar{a}_{65} = Present worth at age 65 of an annuity of \$1 per year, payable in monthly installments until death.

v^{65-x} = The compound discount factor to discount \$1 from pension age 65, to present age x . If rate of interest is 4 per cent v^{65-x} would equal $(1/1.04)^{65-x}$

l_{65}/l_x = Probability that a given employee aged x will be eligible for a pension at age 65.

$65 - \overline{x - 2}$ = Number of years of past service rendered when employee has reached age 65.

${}^{\bar{a}}_{x:65-x}$ = Present worth at age x of an annuity payable in monthly installments until age 65 or until premature termination of service for any reason whatsoever, equal in amount to \$1 the first year and increasing year by year in proportion to salary to be received as indicated by the service table.

Assume for purposes of illustration that the employee receives and will receive in the future, salaries as actually expressed in the salary scale, i.e., s_{65} at age 65, s_x at age x , etc. The number of years of service rendered at age 65 will be $65 - (x - 2)$, i.e., the number of years between age at entry and age at retirement; 1 per cent of salary at age 65 will be $s_{65}/100$ and by definition the yearly pension to be received will be $\frac{s_{65}}{100}(65 - \overline{x - 2})$. As this amount will be paid as an annuity at age 65, its value at age 65 is itself times \bar{a}_{65} , the present value of an annuity of 1 at age 65. Thus the value of the benefit at age 65 is $\frac{s_{65}}{100}(65 - \overline{x - 2}) \bar{a}_{65}$. But what we are interested in is the *present* value of the benefit as respects any given employee.

As there are l_x employees at age x and l_{65} at age 65, the probability that a given employee aged x will be one of the l_{65} at age 65 is l_{65}/l_x ; hence his chance of receiving the pension benefit at age 65 is l_{65}/l_x . The chance of receiving the benefit at age 65, multiplied by the value of the benefit at age 65 gives the present value sought after interest has been taken into account by multiplying the result by v^{65-x} . Hence the present value of the benefit for any employee at age x and receiving a salary of s_x is $\frac{s_{65}}{100}(65 - \overline{x - 2}) \bar{a}_{65} \frac{l_{65}}{l_x} v^{65-x}$.

The factor $.01 s_x {}^{\bar{a}}_{x:65-x}$ in formula (1) represents the present value of an annuity of 1 per cent of the employee's salary, beginning with a salary of s_x at age x . Hence, if this is the present value of 1 per cent of salary, to find out what percentage of future salary must be taken to amount to the benefit it is only necessary to divide the present value of the benefit by the present value of 1 per cent of future salary. This gives the normal cost.

The reasoning above given may, of course, be readily modified so as to apply to any specified retirement age, or any other initial salary at age x , or to any other percentage of final salary multiplied by number of years of service. Using actuarial notation the following formula (2), equivalent to formula (1), would be the formula actually used in practice.

$$100 {}^6\bar{P}_{[x-2]+2} = \frac{{}^6D_{65}(65 - \overline{x - 2}) \bar{a}_{65}}{{}^6N_x - {}^6N_{65}} \quad (2)$$

Denoting by ${}^6\bar{V}_{[x-2]+2}$ the reserve per unit of salary, at the end of the n th year of service, we may first note that when $n = 1$ or $n = 2$, that is, at the end of the first or second year of service, the reserve is 0. This is

because no normal cost is assumed to be contributed until after two years of service. When $n = 3$, that is, at the end of the third year of service, the reserve may be expressed as follows:

$${}^3_3 \bar{V}_{[x-2]+2} = \frac{{}^8_{65}}{100} (65 - \bar{x} - 2) \bar{a}_{65} \frac{l_{65}}{l_{x+1}} v^{65-(x+1)} - 100 {}^6\bar{P}_{[x-2]+2} (.01) {}^8s_{x+1} {}^8a_{x+1:65-(x+1)} \quad (3)$$

where the symbols have the same meaning as in formula (1) except that in several places the attained age after three years of service ($x + 1$) is substituted for the age after two years of service.

The logic of the above formula may be briefly explained in the following manner. By comparison with the paragraph illustrating the derivation of formula (1) it may be seen that the first half of formula (3) namely

$$\frac{{}^8_{65}}{100} (65 - \bar{x} - 2) \bar{a}_{65} \frac{l_{65}}{l_{x+1}} v^{65-(x+1)}$$

is the present worth to an employee aged ($x + 1$) of a benefit taking account of $(65 - \bar{x} - 2)$ years of service, instead of $(65 - (x + 1) - 2)$ years as would be the case for a new employee aged ($x + 1$) who had entered the service two years ago. If no future contributions were expected this expression would represent the liability, but future contributions are expected amounting to $100 {}^6\bar{P}_{[x-2]+2}$ per cent of future salaries. Hence the present value of these are deducted from the present value of the benefit. The present value of such future contributions is

$$100 {}^6\bar{P}_{[x-2]+2} (.01) {}^8s_{x+1} {}^8a_{x+1:65-(x+1)}$$

Finally, deducting this last factor from the first gives the reserve as shown by formula (3). A similar process is followed for other durations of service. Using commutation columns formula (3) may be expressed as follows:

$${}^3_3 \bar{V}_{[x-2]+2} = \frac{{}^8D_{65} .01 (65 - \bar{x} - 2) \bar{a}_{65}}{{}^8D_{x+1}} - 100 {}^6\bar{P}_{[x-2]+2} \frac{{}^8N_{x+1} - {}^8N_{65}}{{}^8D_{x+1}} \quad (4)$$

and

$${}^n_n \bar{V}_{[x-2]+2} = \frac{{}^8D_{65} .01 (65 - \bar{x} - 2) \bar{a}_{65}}{{}^8D_{x+n-2}} - 100 {}^6\bar{P}_{[x-2]+2} \frac{{}^8N_{x+n-2} - {}^8N_{65}}{{}^8D_{x+n-2}} \quad (5)$$

will give the reserve at the end of n years of service.

$${}^{n+\frac{1}{2}}_{n+\frac{1}{2}} \bar{V}_{[x-2]+2} = \frac{1}{2} \{ {}^n_n \bar{V}_{[x-2]+2} + {}^{n+1}_{n+1} \bar{V}_{[x-2]+2} \} \quad (6)$$

represents the reserve at the end of $n + \frac{1}{2}$ years of service per unit of salary at that time.

If the employees are classified by grouping all those who have entered service during a particular calendar year by age at entry nearest birthday, we may assume that employees enter on the average in the middle of a calendar year at their exact ages, and that an employee aged $x - 2$ will, at the end of the

n th calendar year, where the calendar year of entry is counted as year 0, have served $n + \frac{1}{2}$ years and have attained age $x + n - 1\frac{1}{2}$. Formulae (2) and (5) are based on the assumption of a pension benefit of one per cent of the final salary for each year of service. If the rules provide for a benefit of 2 per cent or any other specified per cent, the corresponding normal costs and reserves may be immediately calculated by multiplying by the ratio which the specified percentage bears to 1 per cent.

High and Low Rates of Withdrawal. To show the effect of the withdrawal rate on costs and reserves the following comparative tables of costs and reserves have been inserted. The high and low withdrawal factors are taken from the tables at the end of this paper, denoted I and Ia respectively.

NORMAL ANNUAL COST PER \$1,000 OF ANNUAL SALARY FOR ACTIVE EMPLOYEES

Pension at age 65 of 1 per cent of salary times years of service,
Interest 4 per cent
(Accumulations to commence with *third* year of service)

Age at entry into service	Normal annual cost for		Ratio of column 3 to column 2
	High rate of withdrawal	Low rate of withdrawal	
1	2	3	4
15	0.21	4.11	19.57
20	0.67	6.40	9.56
25	2.09	10.00	4.78
30	5.69	15.21	2.67
35	12.69	22.12	1.74
40	23.18	30.70	1.32
45	36.30	41.10	1.13
50	51.83	54.19	1.05

From the above table it is seen that the effect on the normal annual cost, of doubling the withdrawal rate, is at entry age fifteen equivalent to multiplying that cost almost twenty-fold. This effect decreases until at the older entry ages such effect is practically negligible due to the smaller number of withdrawals at the higher ages. The normal costs shown above are based on what might be termed average maximum and minimum rates of withdrawal for the general experience to be found in industrial enterprises. It is easily seen that the rate of withdrawal is the dominant factor in determining the cost of these non-contributory plans.

The following table shows the effect of differing withdrawal rates on the reserves:

RESERVES PER \$1,000 OF ANNUAL SALARY FOR ACTIVE EMPLOYEES
Pension at age 65 of 1 per cent of salary times years of service, interest 4 per cent

Years of service $n + \frac{1}{2}$	Reserves at end of $n + \frac{1}{2}$ years of service for indicated ages at entry into service							
	15		25		35		45	
	High rate of withdrawal	Low rate of withdrawal	High rate of withdrawal	Low rate of withdrawal	High rate of withdrawal	Low rate of withdrawal	High rate of withdrawal	Low rate of withdrawal
$2\frac{1}{2}$	0	2	1	5	7	12	19	21
$3\frac{1}{2}$	0	7	4	17	23	36	61	66
$4\frac{1}{2}$	1	12	8	29	42	64	108	115
$9\frac{1}{2}$	5	47	46	121	200	248	421	423
$19\frac{1}{2}$	70	230	378	521	917	917	1,613	1,611
$29\frac{1}{2}$	491	733	1,324	1,362	2,439	2,434		
$39\frac{1}{2}$	1,671	1,763	3,259	3,256				
$49\frac{1}{2}$	4,075	4,074						

This table shows that the effect of the withdrawal rate on the reserves is the greatest for the younger ages at entry and for the shorter durations of service. As the duration of service increases, the reserve values approach each other until at attained age sixty-five they are identical.

Illustrative Tables. Table I is a service table computed on the basis of the following assumptions: withdrawal rates as previously given for company A; salary scale as previously given for company C; American Men Ultimate Mortality; rate of becoming disabled, 200 per cent of Hunter's Disability Table. While these assumptions are somewhat more conservative than would apply to the average industrial enterprise, it is not intended or suggested that the table be used in any actual case, unless a full study of the facts showed its adaptability to the circumstances. It is almost always necessary to construct a special service table to meet individual conditions.

Table Ia is a service table calculated on the assumption that the rate of withdrawal at all ages is twice as great as it was in Table I. Rates of mortality, disability and the salary scale are assumed to be the same as in Table I.

Table II shows the value of $1,000^* \bar{P}_{[x-1]+1}$ computed on the basis of Table I with 4 per cent interest, for the four retirement ages 55, 60, 65, and 70. Normal annual costs for intermediate retirement ages may be approximated by interpolation.

Table IIa shows the value of $1,000^* \bar{P}_{[x-1]+1}$ computed on the basis of the service Table Ia.

Tables III and IIIa give for quinquennial ages at entry and all durations the reserve factors corresponding to the normal annual costs given in Tables II and IIa respectively.

In applying the method of valuation herein described it is necessary to have a schedule showing the salaries of all active employees arranged according to age at entry into service and years of entry into service.

The reserves as of Dec. 31, 1925, for example, might be determined as in the following illustration. The reserve factors are taken from Table III at the end of this paper.

RESERVES FOR ACTIVE EMPLOYEES
In Service Dec. 31, 1925; Retirement Age, 65 years; Year of Entry into Service, 1923; Duration of Service $2\frac{1}{2}$ years

Age at entry group	Number of employees in group	Salary of group during 1925	Reserve per \$1,000 of annual salary	Total reserve Col. 3 x Col. 4 1,000
1	2	3	4	5
13 to 17	2	\$ 1,240.00	\$2.00	\$ 2.48
18 to 22	4	4,370.00	3.00	13.11
23 to 27, etc.	7	10,500.00	5.00	52.50
Totals.....	13	\$16,110.00	.....	\$68.09

Similar schedules would be drawn up for years of entry 1922, 1921, and so on. A grand total of all these schedules would show the reserves which should be on hand in respect of active employees as of the valuation date. The difference between the reserve thus found and that actually in hand would indicate the actuarial deficiency or surplus of the system. If the system shows a deficiency, such deficiency may be gradually extinguished either by setting aside a certain amount each year calculated to wipe out the deficiency after a predetermined number of years or by providing for the setting aside each year of an additional percentage of the pay roll until the deficiency has been liquidated.

The average normal cost for the year would be calculated by multiplying the total present salaries for each age at entry by the proper percentage for that age and taking the total. If this total be divided by the total salaries upon which it is based, the result will give the percentage of the annual pay roll (excluding salaries of employees with less than two years of service) which the pension system is costing. The average normal cost expressed as a percentage of the gross pay roll may be found by dividing the total normal cost as above computed by the gross annual pay roll.

The Valuation of Pensions in Force. Pensions which have been granted and are in force may be valued as continuous or monthly annuities. In Table IV is given the present worth at the attained age of the pensioner of \$100 per year payable in monthly installments, for both service pensioners and for disability pensioners.

Advantages of Tabular Reserves. A scheme of tabular reserves as just described has certain advantages, all of which may not be obvious at first sight.

After the normal costs and reserve tables have once been calculated, the method is easy to apply and the employer may make a yearly valuation without actuarial assistance although every five or six years a recomputation of the basic tables based upon the company's intervening experience should be made by an actuary.

Further, the employer can tell just how much he is setting aside as respects any given employee, and how much the reserve as respects any employee is.

By making a valuation each year the employer may readily keep account of the progress which is being made in the extinguishment of the accrued liability. During prosperous years he may desire to set aside a large amount toward the amortization of the accrued liability, while in lean years he may desire to set aside only the minimum amount necessary to avoid any increase in the deficiency of the system.

TABLE I.—SERVICE TABLE BASED ON LOW RATE OF WITHDRAWAL

Attained age	Rate of termination of service per 1,000 (excluding first 2 years of service)			Of 10,000,000 employees entering pension plan at age 15 after 2 years of service					Salary scale	Attained age
	By withdrawal	By death	By disability	Number in service at attained age x	Number of terminations of service between ages x and $x + 1$				Salary at age x corresponding to a salary of \$1,000 at age 65	
					By withdrawal	By death	By disability	Total decrement		
x	$1,000q_x^w$	$1,000q_x^d$	$1,000q_x^r$	L_x	w_x	d_x	r_x	$w_x + d_x + r_x$	$1,000s_x$	x
1	2	3	4	5	6	7	8	9	10	11
15	128.769	3.460	1.018	10,000,000	1,287,690	34,600	10,180	1,332,470	217.99	15
16	127.421	3.532	1.020	8,667,530	1,104,425	30,614	8,841	1,143,880	240.06	16
17	126.366	3.625	1.022	7,523,650	950,734	27,273	7,689	985,696	263.30	17
18	125.609	3.709	1.024	6,537,954	821,226	24,249	6,695	852,170	287.64	18
19	125.152	3.814	1.026	5,685,784	711,587	21,686	5,834	739,107	313.01	19
20	125.000	3.921	1.030	4,946,677	618,335	19,396	5,095	642,826	339.32	20
21	124.848	4.018	1.034	4,303,851	537,327	17,293	4,450	559,070	366.47	21
22	124.391	4.116	1.038	3,744,781	465,817	15,414	3,887	485,118	394.34	22
23	123.634	4.185	1.042	3,259,663	403,005	13,642	3,397	420,044	422.81	23
24	122.579	4.254	1.048	2,839,619	348,078	12,080	2,976	363,134	451.75	24
25	121.231	4.314	1.056	2,476,485	300,227	10,684	2,615	313,526	481.02	25
26	119.596	4.353	1.066	2,162,959	258,681	9,415	2,306	270,402	510.48	26
27	117.684	4.393	1.078	1,892,557	222,724	8,314	2,040	233,078	539.99	27
28	115.503	4.413	1.092	1,659,479	191,675	7,323	1,812	200,810	569.39	28
29	113.064	4.432	1.106	1,458,669	164,923	6,465	1,613	173,001	598.54	29
30	110.378	4.463	1.122	1,285,668	141,909	5,738	1,443	149,090	627.30	30
31	107.459	4.483	1.142	1,136,578	122,136	5,095	1,298	128,529	655.53	31
32	104.321	4.514	1.168	1,008,049	105,161	4,550	1,177	110,888	683.10	32
33	100.979	4.588	1.200	897,161	90,594	4,116	1,077	95,787	709.88	33
34	97.450	4.685	1.238	801,374	78,094	3,754	992	82,840	735.76	34
35	93.750	4.783	1.284	718,534	67,363	3,437	923	71,723	760.63	35
36	89.899	4.937	1.340	646,811	58,148	3,193	867	62,208	784.40	36
37	85.913	5.115	1.406	584,603	50,225	2,990	822	54,037	806.99	37
38	81.814	5.318	1.482	530,566	43,408	2,822	786	47,016	828.34	38
39	77.620	5.557	1.568	483,550	37,533	2,687	758	40,978	848.39	39
40	73.353	5.845	1.664	442,572	32,464	2,587	736	35,787	867.10	40
41	69.033	6.160	1.770	406,785	28,082	2,506	720	31,308	884.44	41
42	64.681	6.536	1.886	375,477	24,286	2,454	708	27,448	900.40	42
43	60.319	6.943	2.012	348,029	20,993	2,416	700	24,109	914.99	43
44	55.968	7.415	2.150	323,920	18,129	2,402	696	21,227	928.21	44

TABLE I.—SERVICE TABLE BASED ON LOW RATE OF WITHDRAWAL—
(Continued)

Attained age	Rate of termination of service per 1,000 (excluding first 2 years of service)			Of 10,000,000 employees entering pension plan at age 15 after 2 years of service					Salary scale	Attained age
	By withdrawal	By death	By disability	Number in service at attained age x	Number of terminations of service between ages x and $x + 1$				Salary at age x corresponding to a salary of \$1,000 at age 65	
					By withdrawal	By death	By disability	Total decrement		
x	1,000 w_x	1,000 d_x	1,000 r_x	l_x	w_x	d_x	r_x	$w_x + d_x + r_x$	1,000 s_x	x
1	2	3	4	5	6	7	8	9	10	11
45	51.648	7.943	2.302	302,693	15,633	2,404	697	18,734	940.09	45
46	47.380	8.518	2.472	283,959	13,454	2,419	702	16,575	950.67	46
47	43.186	9.177	2.662	267,384	11,547	2,454	712	14,713	959.99	47
48	39.088	9.889	2.876	252,671	9,876	2,499	727	13,102	968.10	48
49	35.101	10.705	3.118	239,569	8,409	2,565	747	11,721	975.07	49
50	31.250	11.581	3.392	227,848	7,120	2,639	773	10,532	980.97	50
51	27.550	12.536	3.702	217,316	5,937	2,724	805	9,516	985.87	51
52	24.021	13.623	4.054	207,800	4,992	2,831	842	8,665	989.86	52
53	20.679	14.777	4.460	199,135	4,118	2,943	888	7,949	993.03	53
54	17.541	16.081	4.936	191,186	3,354	3,074	944	7,372	995.46	54
55	14.623	17.469	5.504	183,814	2,688	3,211	1,012	6,911	997.25	55
56	11.936	19.018	6.190	176,903	2,112	3,364	1,095	6,571	998.50	56
57	9.498	20.689	7.024	170,332	1,618	3,524	1,196	6,338	999.30	57
58	7.316	22.511	8.042	163,994	1,200	3,692	1,319	6,211	999.75	58
59	5.404	24.488	9.286	157,783	853	3,864	1,465	6,182	999.95	59
60	3.769	26.684	10.804	151,601	571	4,045	1,638	6,254	1,000.00	60
61	2.421	29.026	12.652	145,347	352	4,219	1,839	6,410	1,000.00	61
62	1.396	31.582	14.894	138,937	190	4,388	2,069	6,647	1,000.00	62
63	.609	34.371	17.604	132,290	81	4,547	2,329	6,957	1,000.00	63
64	.153	37.384	20.866	125,333	19	4,685	2,615	7,319	1,000.00	64
65	.....	40.661	24.776	118,014	.....	4,799	2,924	7,723	1,000.00	65
66	.....	44.181	29.444	110,291	.....	4,873	3,247	8,120	1,000.00	66
67	.....	48.030	34.996	102,171	.....	4,907	3,576	8,483	1,000.00	67
68	52.157	41.578	93,688	4,886	3,895	8,781	1,000.00	68
69	56.640	49.362	84,907	4,809	4,191	9,000	1,000.00	69
70	75,907	70

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TABLE II.—NORMAL ANNUAL COST PER \$1,000 OF ANNUAL SALARY FOR ACTIVE EMPLOYEES

Pension at Retirement Age of 1 Per Cent of Salary Times Years of Service, Interest 4 per cent; Retirement Ages, 55, 60, 65, and 70

Low Rate of Withdrawal (underlying assumptions as per Table I)

Age at entry into service	Normal annual cost for pension at retirement age of				Age at entry into service
	55	60	65	70	
$x-2$	$1,000 \text{ } ^{55}\bar{P}_{[x-2]+2}$	$1,000 \text{ } ^{60}\bar{P}_{[x-2]+2}$	$1,000 \text{ } ^{65}\bar{P}_{[x-2]+2}$	$1,000 \text{ } ^{70}\bar{P}_{[x-2]+2}$	$x-2$
15	10.66	6.94	4.11	1.94	15
16	11.59	7.56	4.48	2.12	16
17	12.61	8.24	4.89	2.32	17
18	13.74	8.99	5.35	2.54	18
19	14.97	9.81	5.85	2.78	19
20	16.33	10.72	6.40	3.05	20
21	17.81	11.71	7.00	3.34	21
22	19.43	12.80	7.66	3.66	22
23	21.18	13.98	8.38	4.01	23
24	23.08	15.25	9.16	4.39	24
25	25.13	16.63	10.00	4.80	25
26	27.33	18.11	10.91	5.25	26
27	29.69	19.70	11.88	5.73	27
28	32.22	21.40	12.92	6.24	28
29	34.90	23.21	14.03	6.78	29
30	37.75	25.13	15.21	7.36	30
31	40.78	27.16	16.46	7.98	31
32	43.96	29.29	17.77	8.63	32
33	47.33	31.54	19.15	9.31	33
34	50.87	33.90	20.60	10.03	34
35	54.59	36.37	22.12	10.79	35
36	58.50	38.95	23.70	11.58	36
37	62.60	41.64	25.35	12.40	37
38	66.92	44.45	27.07	13.26	38
39	71.46	47.37	28.85	14.15	39
40	76.27	50.42	30.70	15.08	40
41	.....	53.59	32.62	16.05	41
42	.....	56.90	34.62	17.06	42
43	.....	60.37	36.69	18.10	43
44	.....	64.02	38.85	19.19	44
45	.....	67.87	41.10	20.33	45
46	.....	.....	43.45	21.52	46
47	.....	.....	45.91	22.76	47
48	.....	.....	48.51	24.06	48
49	.....	.....	51.26	25.44	49
50	.....	.....	54.19	26.89	50
51	.....	.....	.....	28.44	51
52	.....	.....	.....	30.09	52
53	.....	.....	.....	31.87	53
54	.....	.....	.....	33.79	54
55	.....	.....	.....	35.89	55

TABLE III, PART I.—RESERVES PER \$1,000 OF ANNUAL SALARY FOR ACTIVE EMPLOYEES

Pension at Age 55 of 1 Per Cent of Salary Times Years of Service, Interest 4 Per Cent

Low Rate of Withdrawal								
Years of service	Reserve at end of $n + \frac{1}{2}$ years of service for indicated ages at entry into service $1,000 \frac{55}{n + \frac{1}{2}} \overline{V}_{[x-2]+2}$						Years of service	
	$n + \frac{1}{2}$	15	20	25	30	35	40	$n + \frac{1}{2}$
$2\frac{1}{2}$		6	9	13	20	29	40	$2\frac{1}{2}$
$3\frac{1}{2}$		17	27	42	63	90	124	$3\frac{1}{2}$
$4\frac{1}{2}$		30	47	74	110	158	217	$4\frac{1}{2}$
$5\frac{1}{2}$		45	70	110	164	233	318	$5\frac{1}{2}$
$6\frac{1}{2}$		61	96	150	223	315	428	$6\frac{1}{2}$
$7\frac{1}{2}$		79	126	196	289	406	547	$7\frac{1}{2}$
$8\frac{1}{2}$		99	159	246	363	505	676	$8\frac{1}{2}$
$9\frac{1}{2}$		122	196	303	443	613	815	$9\frac{1}{2}$
$10\frac{1}{2}$		149	238	367	532	730	965	$10\frac{1}{2}$
$11\frac{1}{2}$		178	286	437	630	856	1,125	$11\frac{1}{2}$
$12\frac{1}{2}$		212	339	515	736	993	1,298	$12\frac{1}{2}$
$13\frac{1}{2}$		250	398	601	851	1,139	1,482	$13\frac{1}{2}$
$14\frac{1}{2}$		292	464	695	976	1,296	1,681	$14\frac{1}{2}$
$15\frac{1}{2}$		340	537	799	1,110	1,465	.....	$15\frac{1}{2}$
$16\frac{1}{2}$		394	619	911	1,255	1,645	.....	$16\frac{1}{2}$
$17\frac{1}{2}$		455	709	1,034	1,411	1,837	.....	$17\frac{1}{2}$
$18\frac{1}{2}$		523	808	1,166	1,578	2,043	.....	$18\frac{1}{2}$
$19\frac{1}{2}$		598	916	1,309	1,756	2,263	.....	$19\frac{1}{2}$
$20\frac{1}{2}$		682	1,035	1,463	1,946	.....	.....	$20\frac{1}{2}$
$21\frac{1}{2}$		774	1,163	1,629	2,149	.....	.....	$21\frac{1}{2}$
$22\frac{1}{2}$		876	1,303	1,806	2,365	.....	.....	$22\frac{1}{2}$
$23\frac{1}{2}$		989	1,454	1,995	2,597	.....	.....	$23\frac{1}{2}$
$24\frac{1}{2}$		1,112	1,617	2,196	2,844	.....	.....	$24\frac{1}{2}$
$25\frac{1}{2}$		1,246	1,792	2,411	.....	.....	.....	$25\frac{1}{2}$
$26\frac{1}{2}$		1,391	1,979	2,640	.....	.....	.....	$26\frac{1}{2}$
$27\frac{1}{2}$		1,549	2,179	2,884	.....	.....	.....	$27\frac{1}{2}$
$28\frac{1}{2}$		1,720	2,393	3,144	.....	.....	.....	$28\frac{1}{2}$
$29\frac{1}{2}$		1,903	2,620	3,422	.....	.....	.....	$29\frac{1}{2}$
$30\frac{1}{2}$		2,100	2,862	.....	.....	.....	.....	$30\frac{1}{2}$
$31\frac{1}{2}$		2,310	3,120	.....	.....	.....	.....	$31\frac{1}{2}$
$32\frac{1}{2}$		2,535	3,394	.....	.....	.....	.....	$32\frac{1}{2}$
$33\frac{1}{2}$		2,775	3,687	.....	.....	.....	.....	$33\frac{1}{2}$
$34\frac{1}{2}$		3,030	3,999	.....	.....	.....	.....	$34\frac{1}{2}$
$35\frac{1}{2}$		3,301	.....	.....	.....	.....	.....	$35\frac{1}{2}$
$36\frac{1}{2}$		3,590	.....	.....	.....	.....	.....	$36\frac{1}{2}$
$37\frac{1}{2}$		3,897	.....	.....	.....	.....	.....	$37\frac{1}{2}$
$38\frac{1}{2}$		4,224	.....	.....	.....	.....	.....	$38\frac{1}{2}$
$39\frac{1}{2}$		4,574	.....	.....	.....	.....	.....	$39\frac{1}{2}$

TABLE III, PART II.—RESERVES PER \$1,000 OF ANNUAL SALARY FOR ACTIVE EMPLOYEES

**Pension at Age 60 of 1 Per Cent of Salary Times Years of Service, Interest
4 Per Cent**

[illegible]

TABLE III, PART III.—RESERVES PER \$1,000 OF ANNUAL SALARY FOR ACTIVE EMPLOYEES

Pension at Age 65 of 1 Per Cent of Salary Times Years of Service, Interest 4 Per Cent

Low Rate of Withdrawal										
Years of service	Reserve at end of $n + \frac{1}{2}$ years of service for indicated ages at entry into service $1,000 n + \frac{65}{2} \sqrt{[x-2]+2}$								Years of service	
	$n + \frac{1}{2}$	15	20	25	30	35	40	45		50	$n + \frac{1}{2}$
$2\frac{1}{2}$		2	3	5	8	12	16	21	28	$2\frac{1}{2}$
$3\frac{1}{2}$		7	11	17	25	36	50	66	87	$3\frac{1}{2}$
$4\frac{1}{2}$		12	19	29	44	64	87	115	150	$4\frac{1}{2}$
$5\frac{1}{2}$		17	28	44	66	94	128	168	218	$5\frac{1}{2}$
$6\frac{1}{2}$		23	38	60	90	128	172	225	292	$6\frac{1}{2}$
$7\frac{1}{2}$		30	49	78	117	164	220	286	372	$7\frac{1}{2}$
$8\frac{1}{2}$		38	62	98	146	205	272	352	458	$8\frac{1}{2}$
$9\frac{1}{2}$		47	77	121	179	248	328	423	552	$9\frac{1}{2}$
$10\frac{1}{2}$		57	93	146	214	296	388	499	654	$10\frac{1}{2}$
$11\frac{1}{2}$		69	112	174	254	347	453	582	767	$11\frac{1}{2}$
$12\frac{1}{2}$		82	133	205	296	402	522	671	893	$12\frac{1}{2}$
$13\frac{1}{2}$		96	156	239	343	462	597	767	1,035	$13\frac{1}{2}$
$14\frac{1}{2}$		113	182	277	393	525	676	873	1,197	$14\frac{1}{2}$
$15\frac{1}{2}$		131	211	318	447	593	762	988	.....	$15\frac{1}{2}$
$16\frac{1}{2}$		152	242	363	506	666	855	1,117	.....	$16\frac{1}{2}$
$17\frac{1}{2}$		175	278	411	568	744	954	1,260	.....	$17\frac{1}{2}$
$18\frac{1}{2}$		201	316	464	635	828	1,063	1,423	.....	$18\frac{1}{2}$
$19\frac{1}{2}$		230	359	521	707	917	1,182	1,611	.....	$19\frac{1}{2}$
$20\frac{1}{2}$		263	405	582	784	1,013	1,312	.....	.....	$20\frac{1}{2}$
$21\frac{1}{2}$		298	456	648	866	1,116	1,458	.....	.....	$21\frac{1}{2}$
$22\frac{1}{2}$		338	511	719	953	1,228	1,621	.....	.....	$22\frac{1}{2}$
$23\frac{1}{2}$		381	570	794	1,046	1,350	1,808	.....	.....	$23\frac{1}{2}$
$24\frac{1}{2}$		428	634	874	1,146	1,483	2,023	.....	.....	$24\frac{1}{2}$
$25\frac{1}{2}$		480	702	960	1,253	1,630	.....	.....	.....	$25\frac{1}{2}$
$26\frac{1}{2}$		536	775	1,051	1,368	1,794	.....	.....	.....	$26\frac{1}{2}$
$27\frac{1}{2}$		597	854	1,148	1,492	1,979	.....	.....	.....	$27\frac{1}{2}$
$28\frac{1}{2}$		663	938	1,251	1,628	2,190	.....	.....	.....	$28\frac{1}{2}$
$29\frac{1}{2}$		733	1,027	1,362	1,776	2,434	.....	.....	.....	$29\frac{1}{2}$
$30\frac{1}{2}$		809	1,122	1,481	1,941	.....	.....	.....	.....	$30\frac{1}{2}$
$31\frac{1}{2}$		890	1,222	1,609	2,124	.....	.....	.....	.....	$31\frac{1}{2}$
$32\frac{1}{2}$		977	1,330	1,747	2,332	.....	.....	.....	.....	$32\frac{1}{2}$
$33\frac{1}{2}$	1,069	1,445	1,897	2,570	.....	.....	.....	.....	.....	$33\frac{1}{2}$
$34\frac{1}{2}$	1,167	1,567	2,063	2,846	.....	.....	.....	.....	.....	$34\frac{1}{2}$
$35\frac{1}{2}$	1,272	1,698	2,245	.....	.....	.....	.....	.....	.....	$35\frac{1}{2}$
$36\frac{1}{2}$	1,383	1,840	2,450	.....	.....	.....	.....	.....	.....	$36\frac{1}{2}$
$37\frac{1}{2}$	1,502	1,992	2,681	.....	.....	.....	.....	.....	.....	$37\frac{1}{2}$
$38\frac{1}{2}$	1,628	2,159	2,947	.....	.....	.....	.....	.....	.....	$38\frac{1}{2}$
$39\frac{1}{2}$	1,763	2,342	3,256	.....	.....	.....	.....	.....	.....	$39\frac{1}{2}$
$40\frac{1}{2}$	1,907	2,544	.....	.....	.....	.....	.....	.....	.....	$40\frac{1}{2}$
$41\frac{1}{2}$	2,062	2,771	.....	.....	.....	.....	.....	.....	.....	$41\frac{1}{2}$
$42\frac{1}{2}$	2,231	3,027	.....	.....	.....	.....	.....	.....	.....	$42\frac{1}{2}$
$43\frac{1}{2}$	2,414	3,322	.....	.....	.....	.....	.....	.....	.....	$43\frac{1}{2}$
$44\frac{1}{2}$	2,615	3,665	.....	.....	.....	.....	.....	.....	.....	$44\frac{1}{2}$
$45\frac{1}{2}$	2,838	$45\frac{1}{2}$
$46\frac{1}{2}$	3,088	$46\frac{1}{2}$
$47\frac{1}{2}$	3,370	$47\frac{1}{2}$
$48\frac{1}{2}$	3,695	$48\frac{1}{2}$
$49\frac{1}{2}$	4,074	$49\frac{1}{2}$

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TABLE III, PART IV.—RESERVES PER \$1,000 OF ANNUAL SALARY FOR ACTIVE EMPLOYEES

Pension at Age 70 of 1 Per Cent of Salary Times Years of Service, Interest 4 Per Cent

Low Rate of Withdrawal											
Years of service	Reserve at end of $n + \frac{1}{2}$ years of service for indicated ages at entry into service									Years of service	
	$1,000 \frac{70}{n + \frac{1}{2}} \sqrt{x-2} + 2$										
$n + \frac{1}{2}$	15	20	25	30	35	40	45	50	55	$n + \frac{1}{2}$	
$2\frac{1}{2}$	1	2	3	4	6	8	11	14	19	$2\frac{1}{2}$	
$3\frac{1}{2}$	3	5	8	12	18	25	33	43	58	$3\frac{1}{2}$	
$4\frac{1}{2}$	6	9	14	22	31	43	57	75	100	$4\frac{1}{2}$	
$5\frac{1}{2}$	8	13	21	32	46	63	83	108	145	$5\frac{1}{2}$	
$6\frac{1}{2}$	11	18	29	44	62	85	111	145	195	$6\frac{1}{2}$	
$7\frac{1}{2}$	14	23	37	56	80	108	141	184	250	$7\frac{1}{2}$	
$8\frac{1}{2}$	18	30	47	71	100	134	174	227	312	$8\frac{1}{2}$	
$9\frac{1}{2}$	22	37	58	86	121	161	209	274	381	$9\frac{1}{2}$	
$10\frac{1}{2}$	27	45	70	104	144	191	247	325	461	$10\frac{1}{2}$	
$11\frac{1}{2}$	32	53	84	123	169	223	288	381	553	$11\frac{1}{2}$	
$12\frac{1}{2}$	39	63	98	143	196	257	332	443	663	$12\frac{1}{2}$	
$13\frac{1}{2}$	45	74	115	166	225	293	379	514	795	$13\frac{1}{2}$	
$14\frac{1}{2}$	53	87	133	190	266	332	432	594	958	$14\frac{1}{2}$	
$15\frac{1}{2}$	62	100	153	217	289	374	489	687	.....	$15\frac{1}{2}$
$16\frac{1}{2}$	72	116	174	245	325	420	552	797	.....	$16\frac{1}{2}$
$17\frac{1}{2}$	83	132	198	275	363	469	623	928	.....	$17\frac{1}{2}$
$18\frac{1}{2}$	95	151	223	308	404	522	704	1,088	.....	$18\frac{1}{2}$
$19\frac{1}{2}$	109	171	250	342	447	581	797	1,287	.....	$19\frac{1}{2}$
$20\frac{1}{2}$	124	193	280	379	494	645	905	.....	.....	$20\frac{1}{2}$
$21\frac{1}{2}$	141	217	311	419	544	716	1,033	.....	.....	$21\frac{1}{2}$
$22\frac{1}{2}$	160	243	345	461	599	797	1,188	.....	.....	$22\frac{1}{2}$
$23\frac{1}{2}$	180	272	381	506	658	888	1,378	.....	.....	$23\frac{1}{2}$
$24\frac{1}{2}$	203	302	420	555	723	994	1,615	.....	.....	$24\frac{1}{2}$
$25\frac{1}{2}$	227	335	461	606	795	1,118	.....	.....	.....	$25\frac{1}{2}$
$26\frac{1}{2}$	254	370	505	662	875	1,266	.....	.....	.....	$26\frac{1}{2}$
$27\frac{1}{2}$	282	407	551	722	965	1,445	.....	.....	.....	$27\frac{1}{2}$
$28\frac{1}{2}$	314	447	601	788	1,068	1,666	.....	.....	.....	$28\frac{1}{2}$
$29\frac{1}{2}$	347	489	654	860	1,188	1,942	.....	.....	.....	$29\frac{1}{2}$
$30\frac{1}{2}$	383	535	711	939	1,328	.....	.....	.....	.....	$30\frac{1}{2}$
$31\frac{1}{2}$	428	583	773	1,028	1,496	.....	.....	.....	.....	$31\frac{1}{2}$
$32\frac{1}{2}$	462	634	839	1,129	1,701	.....	.....	.....	.....	$32\frac{1}{2}$
$33\frac{1}{2}$	506	689	911	1,244	1,952	.....	.....	.....	.....	$33\frac{1}{2}$
$34\frac{1}{2}$	552	747	991	1,377	2,269	.....	.....	.....	.....	$34\frac{1}{2}$
$35\frac{1}{2}$	602	809	1,079	1,535	.....	.....	.....	.....	.....	$35\frac{1}{2}$
$36\frac{1}{2}$	654	877	1,177	1,724	.....	.....	.....	.....	.....	$36\frac{1}{2}$
$37\frac{1}{2}$	710	950	1,288	1,954	.....	.....	.....	.....	.....	$37\frac{1}{2}$
$38\frac{1}{2}$	770	1,029	1,415	2,238	.....	.....	.....	.....	.....	$38\frac{1}{2}$
$39\frac{1}{2}$	834	1,116	1,564	2,595	.....	.....	.....	.....	.....	$39\frac{1}{2}$
$40\frac{1}{2}$	902	1,213	1,739	.....	.....	.....	.....	.....	.....	$40\frac{1}{2}$
$41\frac{1}{2}$	976	1,321	1,950	.....	.....	.....	.....	.....	.....	$41\frac{1}{2}$
$42\frac{1}{2}$	1,055	1,443	2,204	.....	.....	.....	.....	.....	.....	$42\frac{1}{2}$
$43\frac{1}{2}$	1,142	1,583	2,523	.....	.....	.....	.....	.....	.....	$43\frac{1}{2}$
$44\frac{1}{2}$	1,237	1,747	2,921	.....	.....	.....	.....	.....	.....	$44\frac{1}{2}$
$45\frac{1}{2}$	1,343	1,940	.....	.....	.....	.....	.....	.....	.....	$45\frac{1}{2}$
$46\frac{1}{2}$	1,461	2,173	.....	.....	.....	.....	.....	.....	.....	$46\frac{1}{2}$
$47\frac{1}{2}$	1,595	2,456	.....	.....	.....	.....	.....	.....	.....	$47\frac{1}{2}$
$48\frac{1}{2}$	1,748	2,806	.....	.....	.....	.....	.....	.....	.....	$48\frac{1}{2}$
$49\frac{1}{2}$	1,927	3,247	.....	.....	.....	.....	.....	.....	.....	$49\frac{1}{2}$
$50\frac{1}{2}$	2,139	.....	.....	.....	.....	.....	.....	.....	.....	$50\frac{1}{2}$
$51\frac{1}{2}$	2,394	.....	.....	.....	.....	.....	.....	.....	.....	$51\frac{1}{2}$
$52\frac{1}{2}$	2,704	.....	.....	.....	.....	.....	.....	.....	.....	$52\frac{1}{2}$
$53\frac{1}{2}$	3,088	.....	.....	.....	.....	.....	.....	.....	.....	$53\frac{1}{2}$
$54\frac{1}{2}$	3,572	.....	.....	.....	.....	.....	.....	.....	.....	$54\frac{1}{2}$

TABLE 1a.—SERVICE TABLE BASED ON HIGH RATE OF WITHDRAWAL

Attained age	Rate of termination of service per 1,000 excluding first 2 years of service			Of 10,000,000 employees entering pension plan at age 15 after 2 years of service					Salary scale	Attained age
	By withdrawal	By death	By disability	Number in service at attained age x	Number of terminations of service between ages x and $x + 1$				Salary at age x corresponding to a salary of \$1,000 at age 65	
					By withdrawal	By death	By disability	Total decrement		
x	$1,000q_x^w$	$1,000q_x^d$	$1,000q_x^r$	l_x	w_x	d_x	r_x	$w_x + d_x + r_x$	$1,000s_x$	x
1	2	3	4	5	6	7	8	9	10	11
15	257.538	3.460	1.018	10,000,000	2,575,380	34,600	10,180	2,620,160	217.99	15
16	254.842	3.532	1.020	7,379,840	1,880,693	26,066	7,527	1,914,286	240.06	16
17	252.732	3.625	1.022	5,465,554	1,381,320	19,813	5,586	1,406,719	263.30	17
18	251.218	3.709	1.024	4,058,835	1,019,652	15,054	4,156	1,038,862	287.64	18
19	250.304	3.814	1.026	3,019,973	755,911	11,518	3,098	770,527	313.01	19
20	250.000	3.921	1.030	2,249,446	562,382	8,820	2,317	573,499	339.32	20
21	249.696	4.018	1.034	1,675,947	418,477	6,734	1,733	426,944	366.47	21
22	248.782	4.116	1.038	1,249,003	310,729	5,141	1,296	317,166	394.34	22
23	247.268	4.185	1.042	931,837	230,413	3,900	971	235,284	422.81	23
24	245.158	4.254	1.048	696,553	170,766	2,963	730	174,459	451.75	24
25	242.462	4.314	1.056	522,094	126,588	2,252	551	129,391	481.02	25
26	239.192	4.353	1.066	392,703	93,931	1,709	419	96,059	510.48	26
27	235.368	4.393	1.078	296,644	69,821	1,303	320	71,444	539.99	27
28	231.006	4.413	1.092	225,200	52,023	994	246	53,263	569.39	28
29	226.128	4.432	1.106	171,937	38,880	762	190	39,832	598.54	29
30	220.756	4.463	1.122	132,105	29,163	590	148	29,901	627.30	30
31	214.918	4.483	1.142	102,204	21,965	458	117	22,540	655.53	31
32	208.642	4.514	1.168	79,664	16,621	360	93	17,074	683.10	32
33	201.958	4.588	1.200	62,590	12,641	287	75	13,003	709.88	33
34	194.900	4.685	1.238	49,587	9,665	232	61	9,958	735.76	34
35	187.500	4.783	1.284	39,629	7,430	190	51	7,671	760.63	35
36	179.798	4.937	1.340	31,958	5,746	158	43	5,947	784.40	36
37	171.826	5.115	1.406	26,011	4,469	133	37	4,639	806.99	37
38	163.628	5.318	1.482	21,372	3,497	114	32	3,643	828.34	38
39	155.240	5.557	1.568	17,729	2,752	99	28	2,879	848.39	39
40	146.706	5.845	1.664	14,850	2,179	87	25	2,291	867.10	40
41	138.066	6.160	1.770	12,559	1,734	77	22	1,833	884.44	41
42	129.362	6.536	1.886	10,726	1,388	70	20	1,478	900.40	42
43	120.638	6.943	2.012	9,248	1,116	64	19	1,199	914.99	43
44	111.936	7.415	2.150	8,049	901	60	17	978	928.21	44
45	103.296	7.943	2.302	7,071	730	56	16	802	940.09	45
46	94.760	8.518	2.472	6,269	594	53	15	662	950.67	46
47	86.372	9.177	2.662	5,607	484	51	15	550	959.99	47
48	78.176	9.889	2.876	5,057	395	50	15	460	968.10	48
49	70.202	10.705	3.118	4,597	323	49	14	386	975.07	49

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TABLE 1*g*.—SERVICE TABLE BASED ON HIGH RATE OF WITHDRAWAL.—
(Continued)

Attained age	Rate of termination of service per 1,000 excluding first 2 years of service			Of 10,000,000 employees entering pension plan at age 15 after 2 years of service					Salary scale	Attained age
	By withdrawal	By death	By disability	Number in service at attained age x	Number of terminations of service between ages x and $x + 1$				Salary at age x corresponding to a salary of \$1,000 at age 65	
					By withdrawal	By death	By disability	Total decrement		
x	$1,000q_x^w$	$1,000q_x^d$	$1,000q_x^r$	l_x	w_x	d_x	r_x	$w_x + d_x + r_x$	$1,000s_x$	x
1	2	3	4	5	6	7	8	9	10	11
50	62.500	11.581	3.392	4,211	263	49	14	326	980.97	50
51	55.100	12.536	3.702	3,885	214	49	14	277	985.87	51
52	48.042	13.623	4.054	3,608	173	49	15	237	989.86	52
53	41.358	14.777	4.460	3,371	139	50	15	204	993.03	53
54	35.082	16.081	4.936	3,167	111	51	16	178	995.46	54
55	29.246	17.469	5.504	2,989	87	52	16	155	997.25	55
56	23.872	19.018	6.190	2,834	68	54	18	140	998.50	56
57	18.996	20.689	7.024	2,694	51	56	19	126	999.30	57
58	14.632	22.511	8.042	2,568	38	58	21	117	999.75	58
59	10.808	24.488	9.286	2,451	26	60	23	109	999.95	59
60	7.538	26.684	10.804	2,342	18	62	25	105	1,000.00	60
61	4.842	29.026	12.652	2,237	11	65	28	104	1,000.00	61
62	2.732	31.582	14.894	2,133	6	67	32	105	1,000.00	62
63	1.218	34.371	17.604	2,028	2	70	36	108	1,000.00	63
64	.306	37.384	20.866	1,920	1	72	40	113	1,000.00	64
65	.....	40.661	24.776	1,807	.....	73	45	118	1,000.00	65
66	.....	44.181	29.444	1,689	.....	75	50	125	1,000.00	66
67	.....	48.030	34.996	1,564	.....	75	55	130	1,000.00	67
68	.....	52.157	41.578	1,434	.....	75	60	135	1,000.00	68
69	.....	56.640	49.362	1,299	.....	74	64	138	1,000.00	69
70	.....	.....	.....	1,161	.....	.....	.....	.....	.....	70

TABLE IIa.—NORMAL ANNUAL COST PER \$1,000 OF ANNUAL SALARY FOR ACTIVE EMPLOYEES

Pension at Retirement Age of 1 Per Cent of Salary Times Years of Service, Interest 4 Per Cent; Retirement Ages: 55, 60, 65, and 70

Age at entry into service	Normal annual cost for pension at retirement age of				Age at entry into service
	55	60	65	70	
$x-2$	$1,000 \quad {}^{55}\bar{P}_{[x-2]+2}$	$1,000 \quad {}^{60}\bar{P}_{[x-2]+2}$	$1,000 \quad {}^{65}\bar{P}_{[x-2]+2}$	$1,000 \quad {}^{70}\bar{P}_{[x-2]+2}$	$x-2$
15	.56	.35	.21	.10	15
16	.71	.44	.26	.12	16
17	.89	.56	.33	.16	17
18	1.12	.70	.42	.20	18
19	1.41	.88	.53	.25	19
20	1.77	1.12	.67	.32	20
21	2.23	1.41	.85	.41	21
22	2.79	1.78	1.07	.51	22
23	3.49	2.23	1.34	.65	23
24	4.34	2.78	1.68	.81	24
25	5.38	3.46	2.09	1.01	25
26	6.62	4.27	2.59	1.26	26
27	8.10	5.24	3.19	1.55	27
28	9.84	6.39	3.90	1.90	28
29	11.88	7.74	4.73	2.31	29
30	14.22	9.29	5.69	2.78	30
31	16.90	11.07	6.79	3.33	31
32	19.93	13.08	8.04	3.95	32
33	23.32	15.32	9.44	4.65	33
34	27.07	17.81	10.99	5.42	34
35	31.19	20.54	12.69	6.27	35
36	35.68	23.50	14.53	7.19	36
37	40.53	26.69	16.51	8.18	37
38	45.75	30.09	18.61	9.23	38
39	51.32	33.70	20.84	10.35	39
40	57.27	37.50	23.18	11.52	40
41	.....	41.48	25.63	12.75	41
42	.....	45.65	28.16	14.03	42
43	.....	50.00	30.79	15.35	43
44	.....	54.53	33.50	16.71	44
45	.....	59.26	36.30	18.11	45
46	.....	.....	39.19	19.56	46
47	.....	.....	42.17	21.06	47
48	.....	.....	45.26	22.60	48
49	48.47	24.19	49
50	51.83	25.85	50
51	27.58	51
52	29.40	52
53	31.32	53
54	33.36	54
55	35.57	55

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TABLE IIIa, PART I.—RESERVES PER \$1,000 OF ANNUAL SALARY FOR ACTIVE EMPLOYEES

Pension at Age 55 of 1 Per Cent of Salary Times Years of Service, Interest 4 Per Cent

High Rate of Withdrawal							
Years of service	Reserve at end of $n + \frac{1}{2}$ years of service for indicated ages at entry into service $1,000 n + \frac{1}{2} \sqrt[55]{V_{[x-2]+2}}$						Years of service
$n + \frac{1}{2}$	15	20	25	30	35	40	$n + \frac{1}{2}$
$2\frac{1}{2}$	.....	1	3	8	17	31	$2\frac{1}{2}$
$3\frac{1}{2}$	1	3	10	26	56	99	$3\frac{1}{2}$
$4\frac{1}{2}$	2	6	19	49	103	179	$4\frac{1}{2}$
$5\frac{1}{2}$	3	10	31	78	159	270	$5\frac{1}{2}$
$6\frac{1}{2}$	5	16	46	113	225	373	$6\frac{1}{2}$
$7\frac{1}{2}$	7	22	65	156	302	490	$7\frac{1}{2}$
$8\frac{1}{2}$	10	31	88	207	391	619	$8\frac{1}{2}$
$9\frac{1}{2}$	13	42	118	268	493	762	$9\frac{1}{2}$
$10\frac{1}{2}$	18	56	154	340	607	918	$10\frac{1}{2}$
$11\frac{1}{2}$	24	74	197	424	735	1,087	$11\frac{1}{2}$
$12\frac{1}{2}$	32	97	250	520	877	1,269	$12\frac{1}{2}$
$13\frac{1}{2}$	42	125	313	631	1,032	1,465	$13\frac{1}{2}$
$14\frac{1}{2}$	54	160	388	755	1,202	1,675	$14\frac{1}{2}$
$15\frac{1}{2}$	71	202	475	894	1,385	.....	$15\frac{1}{2}$
$16\frac{1}{2}$	92	254	576	1,049	1,581	.....	$16\frac{1}{2}$
$17\frac{1}{2}$	117	316	692	1,218	1,792	.....	$17\frac{1}{2}$
$18\frac{1}{2}$	150	390	824	1,403	2,016	.....	$18\frac{1}{2}$
$19\frac{1}{2}$	190	478	972	1,604	2,255	.....	$19\frac{1}{2}$
$20\frac{1}{2}$	239	580	1,137	1,819	.....	.....	$20\frac{1}{2}$
$21\frac{1}{2}$	298	698	1,320	2,049	.....	.....	$21\frac{1}{2}$
$22\frac{1}{2}$	369	833	1,520	2,295	.....	.....	$22\frac{1}{2}$
$23\frac{1}{2}$	454	987	1,738	2,555	.....	.....	$23\frac{1}{2}$
$24\frac{1}{2}$	554	1,159	1,973	2,830	.....	.....	$24\frac{1}{2}$
$25\frac{1}{2}$	671	1,352	2,225	.....	.....	.....	$25\frac{1}{2}$
$26\frac{1}{2}$	806	1,564	2,494	.....	.....	.....	$26\frac{1}{2}$
$27\frac{1}{2}$	961	1,796	2,779	.....	.....	.....	$27\frac{1}{2}$
$28\frac{1}{2}$	1,136	2,048	3,082	.....	.....	.....	$28\frac{1}{2}$
$29\frac{1}{2}$	1,333	2,320	3,402	.....	.....	.....	$29\frac{1}{2}$
$30\frac{1}{2}$	1,553	2,611	.....	.....	.....	.....	$30\frac{1}{2}$
$31\frac{1}{2}$	1,795	2,922	.....	.....	.....	.....	$31\frac{1}{2}$
$32\frac{1}{2}$	2,059	3,252	.....	.....	.....	.....	$32\frac{1}{2}$
$33\frac{1}{2}$	2,347	3,601	.....	.....	.....	.....	$33\frac{1}{2}$
$34\frac{1}{2}$	2,657	3,971	.....	.....	.....	.....	$34\frac{1}{2}$
$35\frac{1}{2}$	2,990	.....	.....	.....	.....	.....	$35\frac{1}{2}$
$36\frac{1}{2}$	3,344	.....	.....	.....	.....	.....	$36\frac{1}{2}$
$37\frac{1}{2}$	3,720	.....	.....	.....	.....	.....	$37\frac{1}{2}$
$38\frac{1}{2}$	4,118	.....	.....	.....	.....	.....	$38\frac{1}{2}$
$39\frac{1}{2}$	4,539	.....	.....	.....	.....	.....	$39\frac{1}{2}$

TABLE IIIa, PART II.—RESERVES PER \$1,000 OF ANNUAL SALARY FOR ACTIVE EMPLOYEES

Pension at Age 60 of 1 Per Cent of Salary Times Years of Service, Interest 4 Per Cent

High Rate of Withdrawal								
Years of service	Reserve at end of $n + \frac{1}{2}$ years of service for indicated ages at entry into service $1,000 \cdot \frac{60}{n + \frac{1}{2}} \sqrt{x-2} + 2$							Years of service
$n + \frac{1}{2}$	15	20	25	30	35	40	45	$n + \frac{1}{2}$
$2\frac{1}{2}$	.....	1	2	5	11	21	32	$2\frac{1}{2}$
$3\frac{1}{2}$	1	2	7	17	37	65	99	$3\frac{1}{2}$
$4\frac{1}{2}$	1	4	12	32	68	117	176	$4\frac{1}{2}$
$5\frac{1}{2}$	2	7	20	51	105	177	260	$5\frac{1}{2}$
$6\frac{1}{2}$	3	10	30	74	148	244	354	$6\frac{1}{2}$
$7\frac{1}{2}$	4	14	42	102	199	321	456	$7\frac{1}{2}$
$8\frac{1}{2}$	6	20	57	135	258	405	567	$8\frac{1}{2}$
$9\frac{1}{2}$	8	27	76	175	324	499	687	$9\frac{1}{2}$
$10\frac{1}{2}$	11	36	99	222	400	601	817	$10\frac{1}{2}$
$11\frac{1}{2}$	15	47	127	277	484	712	956	$11\frac{1}{2}$
$12\frac{1}{2}$	20	61	161	340	577	831	1,105	$12\frac{1}{2}$
$13\frac{1}{2}$	26	79	201	412	680	959	1,267	$13\frac{1}{2}$
$14\frac{1}{2}$	34	101	249	493	791	1,096	1,441	$14\frac{1}{2}$
$15\frac{1}{2}$	44	128	305	584	912	1,243	.....	$15\frac{1}{2}$
$16\frac{1}{2}$	57	161	370	685	1,041	1,399	.....	$16\frac{1}{2}$
$17\frac{1}{2}$	73	200	445	796	1,180	1,567	.....	$17\frac{1}{2}$
$18\frac{1}{2}$	93	247	530	917	1,328	1,747	.....	$18\frac{1}{2}$
$19\frac{1}{2}$	118	302	625	1,047	1,485	1,941	.....	$19\frac{1}{2}$
$20\frac{1}{2}$	149	367	732	1,188	1,651	.....	.....	$20\frac{1}{2}$
$21\frac{1}{2}$	186	442	849	1,338	1,828	.....	.....	$21\frac{1}{2}$
$22\frac{1}{2}$	230	527	978	1,498	2,018	.....	.....	$22\frac{1}{2}$
$23\frac{1}{2}$	283	624	1,118	1,668	2,221	.....	.....	$23\frac{1}{2}$
$24\frac{1}{2}$	346	734	1,269	1,848	2,439	.....	.....	$24\frac{1}{2}$
$25\frac{1}{2}$	418	855	1,431	2,038	.....	.....	.....	$25\frac{1}{2}$
$26\frac{1}{2}$	503	990	1,604	2,240	.....	.....	.....	$26\frac{1}{2}$
$27\frac{1}{2}$	599	1,136	1,788	2,456	.....	.....	.....	$27\frac{1}{2}$
$28\frac{1}{2}$	709	1,296	1,982	2,686	.....	.....	.....	$28\frac{1}{2}$
$29\frac{1}{2}$	832	1,408	2,188	2,935	.....	.....	.....	$29\frac{1}{2}$
$30\frac{1}{2}$	968	1,653	2,405	.....	.....	.....	.....	$30\frac{1}{2}$
$31\frac{1}{2}$	1,119	1,849	2,636	.....	.....	.....	.....	$31\frac{1}{2}$
$32\frac{1}{2}$	1,285	2,058	2,881	.....	.....	.....	.....	$32\frac{1}{2}$
$33\frac{1}{2}$	1,464	2,279	3,144	.....	.....	.....	.....	$33\frac{1}{2}$
$34\frac{1}{2}$	1,658	2,513	3,427	.....	.....	.....	.....	$34\frac{1}{2}$
$35\frac{1}{2}$	1,865	2,760	.....	.....	.....	.....	.....	$35\frac{1}{2}$
$36\frac{1}{2}$	2,086	3,021	.....	.....	.....	.....	.....	$36\frac{1}{2}$
$37\frac{1}{2}$	2,321	3,299	.....	.....	.....	.....	.....	$37\frac{1}{2}$
$38\frac{1}{2}$	2,569	3,597	.....	.....	.....	.....	.....	$38\frac{1}{2}$
$39\frac{1}{2}$	2,831	3,918	.....	.....	.....	.....	.....	$39\frac{1}{2}$
$40\frac{1}{2}$	3,108	$40\frac{1}{2}$
$41\frac{1}{2}$	3,401	$41\frac{1}{2}$
$42\frac{1}{2}$	3,714	$42\frac{1}{2}$
$43\frac{1}{2}$	4,048	$43\frac{1}{2}$
$44\frac{1}{2}$	4,408	$44\frac{1}{2}$

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TABLE IIIa, PART III.—RESERVES PER \$1,000 OF ANNUAL SALARY FOR ACTIVE EMPLOYEES

Pension at Age 65 of 1 Per Cent of Salary Times Years of Service, Interest 4 Per Cent

High Rate of Withdrawal										
Years of service	Reserve at end of $n + \frac{1}{2}$ years of service for indicated ages at entry into service $1,000 n + \frac{65}{2} \sqrt{[x-2]} + 2$								Years of service	
	$n + \frac{1}{2}$	15	20	25	30	35	40	45		50	$n + \frac{1}{2}$
$2\frac{1}{2}$	.....	.....	1	4	11	23	40	61	85	$3\frac{1}{2}$
$3\frac{1}{2}$	.....	1	2	8	20	42	72	108	148	$4\frac{1}{2}$
$4\frac{1}{2}$	1	4	12	31	65	109	160	217	291	$5\frac{1}{2}$
$5\frac{1}{2}$	2	6	18	45	91	151	217	291	372	$6\frac{1}{2}$
$6\frac{1}{2}$	3	8	25	62	123	198	280	372	460	$7\frac{1}{2}$
$7\frac{1}{2}$	4	12	34	83	159	251	348	460	555	$8\frac{1}{2}$
$8\frac{1}{2}$	5	16	46	107	200	308	421	555	658	$9\frac{1}{2}$
$10\frac{1}{2}$	7	21	60	136	247	371	500	658	771	$10\frac{1}{2}$
$11\frac{1}{2}$	9	28	77	170	299	440	585	771	897	$11\frac{1}{2}$
$12\frac{1}{2}$	12	37	97	208	356	514	677	897	1,037	$12\frac{1}{2}$
$13\frac{1}{2}$	15	47	122	252	420	593	776	1,037	1,198	$13\frac{1}{2}$
$14\frac{1}{2}$	20	60	151	302	489	678	883	1,198	1,429	$14\frac{1}{2}$
$15\frac{1}{2}$	26	76	185	358	563	768	999	1,429	1,613	$15\frac{1}{2}$
$16\frac{1}{2}$	34	96	224	419	643	865	1,127	1,613	1,815	$16\frac{1}{2}$
$17\frac{1}{2}$	43	119	269	487	729	969	1,269	1,815	2,026	$17\frac{1}{2}$
$18\frac{1}{2}$	55	147	361	561	820	1,080	1,429	2,026	2,246	$18\frac{1}{2}$
$19\frac{1}{2}$	70	180	378	641	917	1,200	1,613	2,246	2,469	$19\frac{1}{2}$
$20\frac{1}{2}$	88	219	443	728	1,020	1,331	1,815	2,469	2,694	$20\frac{1}{2}$
$21\frac{1}{2}$	110	264	514	820	1,129	1,475	2,026	2,694	2,914	$21\frac{1}{2}$
$22\frac{1}{2}$	136	315	591	918	1,246	1,635	2,246	2,914	3,134	$22\frac{1}{2}$
$23\frac{1}{2}$	167	373	676	1,022	1,371	1,817	2,469	3,134	3,354	$23\frac{1}{2}$
$24\frac{1}{2}$	204	438	768	1,132	1,506	2,026	2,694	3,354	3,574	$24\frac{1}{2}$
$25\frac{1}{2}$	247	511	866	1,248	1,653	2,246	2,914	3,574	3,794	$25\frac{1}{2}$
$26\frac{1}{2}$	297	591	970	1,372	1,815	2,469	3,134	3,794	4,014	$26\frac{1}{2}$
$27\frac{1}{2}$	354	679	1,081	1,504	1,996	2,694	3,354	4,014	4,234	$27\frac{1}{2}$
$28\frac{1}{2}$	418	774	1,199	1,645	2,201	2,914	3,574	4,234	4,454	$28\frac{1}{2}$
$29\frac{1}{2}$	491	877	1,324	1,797	2,469	3,134	3,794	4,454	4,674	$29\frac{1}{2}$
$30\frac{1}{2}$	572	987	1,455	1,962	2,694	3,354	4,014	4,674	4,894	$30\frac{1}{2}$
$31\frac{1}{2}$	661	1,104	1,594	2,145	2,914	3,574	4,234	4,894	5,114	$31\frac{1}{2}$
$32\frac{1}{2}$	758	1,229	1,743	2,349	3,134	3,794	4,454	5,114	5,334	$32\frac{1}{2}$
$33\frac{1}{2}$	864	1,361	1,902	2,581	3,354	4,014	4,674	5,334	5,554	$33\frac{1}{2}$
$34\frac{1}{2}$	978	1,501	2,073	2,850	3,574	4,234	4,894	5,554	5,774	$34\frac{1}{2}$
$35\frac{1}{2}$	1,101	1,648	2,259	3,134	3,794	4,454	5,114	5,774	6,000	$35\frac{1}{2}$
$36\frac{1}{2}$	1,231	1,804	2,464	3,419	4,014	4,674	5,334	6,000	6,220	$36\frac{1}{2}$
$37\frac{1}{2}$	1,370	1,970	2,694	3,704	4,234	4,894	5,554	6,220	6,440	$37\frac{1}{2}$
$38\frac{1}{2}$	1,516	2,148	2,955	4,014	4,454	5,114	5,774	6,440	6,660	$38\frac{1}{2}$
$39\frac{1}{2}$	1,671	2,340	3,259	4,234	4,674	5,334	6,000	6,660	6,880	$39\frac{1}{2}$
$40\frac{1}{2}$	1,834	2,548	3,574	4,454	4,894	5,554	6,220	6,880	7,100	$40\frac{1}{2}$
$41\frac{1}{2}$	2,008	2,777	3,850	4,674	5,114	5,774	6,440	7,100	7,320	$41\frac{1}{2}$
$42\frac{1}{2}$	2,192	3,034	4,134	4,894	5,334	6,000	6,660	7,320	7,540	$42\frac{1}{2}$
$43\frac{1}{2}$	2,389	3,327	4,419	5,114	5,554	6,220	6,880	7,540	7,760	$43\frac{1}{2}$
$44\frac{1}{2}$	2,602	3,667	4,704	5,334	5,774	6,440	7,100	7,760	7,980	$44\frac{1}{2}$
$45\frac{1}{2}$	2,833	4,014	5,000	5,554	6,000	6,660	7,320	7,980	8,200	$45\frac{1}{2}$
$46\frac{1}{2}$	3,087	4,365	5,285	5,774	6,220	6,880	7,540	8,200	8,420	$46\frac{1}{2}$
$47\frac{1}{2}$	3,373	4,716	5,570	6,000	6,440	7,100	7,760	8,420	8,640	$47\frac{1}{2}$
$48\frac{1}{2}$	3,698	5,067	5,855	6,220	6,660	7,320	7,980	8,640	8,860	$48\frac{1}{2}$
$49\frac{1}{2}$	4,075	5,418	6,140	6,440	6,880	7,540	8,200	8,860	9,080	$49\frac{1}{2}$

TABLE IIIa, PART IV.—RESERVES PER \$1,000 OF ANNUAL SALARY FOR ACTIVE EMPLOYEES
Pension at Age 70 of 1 Per Cent of Salary Times Years of Service, Interest 4 Per Cent

High Rate of Withdrawal									
Years of service	Reserve at end of $n + \frac{1}{2}$ years of service for indicated ages at entry into service								
	$1,000 \frac{70 - \bar{V}}{n + \frac{1}{2}} [x - 2] + 2$								
$n + \frac{1}{2}$	15	20	25	30	35	40	45	50	55
$2\frac{1}{2}$	.....	.....	1	2	3	6	10	14	19
$3\frac{1}{2}$	.....	1	2	5	11	20	30	42	57
$4\frac{1}{2}$	.....	1	4	10	21	36	54	74	100
$5\frac{1}{2}$	1	2	6	15	32	54	80	108	146
$6\frac{1}{2}$	1	3	9	22	45	75	108	145	196
$7\frac{1}{2}$	1	4	12	30	61	99	139	186	251
$8\frac{1}{2}$	2	6	17	41	79	125	173	229	313
$9\frac{1}{2}$	2	8	22	52	99	153	210	277	382
$10\frac{1}{2}$	3	10	29	67	122	185	250	328	461
$11\frac{1}{2}$	4	14	37	83	148	219	292	385	554
$12\frac{1}{2}$	6	18	47	102	176	255	338	447	663
$13\frac{1}{2}$	7	23	59	123	207	295	387	517	795
$14\frac{1}{2}$	10	29	73	148	241	337	440	597	958
$15\frac{1}{2}$	12	37	89	175	278	382	498	690	
$16\frac{1}{2}$	16	46	108	205	318	430	562	799	
$17\frac{1}{2}$	21	57	130	238	360	482	633	929	
$18\frac{1}{2}$	26	71	155	275	405	537	713	1,089	
$19\frac{1}{2}$	33	87	183	314	453	597	805	1,287	
$20\frac{1}{2}$	42	105	214	356	504	662	912		
$21\frac{1}{2}$	52	126	249	401	558	733	1,038		
$22\frac{1}{2}$	64	151	286	449	615	813	1,192		
$23\frac{1}{2}$	79	179	327	500	677	903	1,380		
$24\frac{1}{2}$	97	210	372	554	744	1,007	1,615		
$25\frac{1}{2}$	117	245	419	611	816	1,129			
$26\frac{1}{2}$	141	283	470	671	896	1,275			
$27\frac{1}{2}$	168	325	523	736	986	1,452			
$28\frac{1}{2}$	198	371	580	805	1,087	1,670			
$29\frac{1}{2}$	233	420	641	879	1,204	1,943			
$30\frac{1}{2}$	271	473	704	960	1,342				
$31\frac{1}{2}$	313	529	772	1,049	1,508				
$32\frac{1}{2}$	360	589	844	1,149	1,709				
$33\frac{1}{2}$	410	652	921	1,263	1,958				
$34\frac{1}{2}$	464	719	1,003	1,394	2,270				
$35\frac{1}{2}$	522	789	1,093	1,549					
$36\frac{1}{2}$	584	864	1,193	1,735					
$37\frac{1}{2}$	650	944	1,304	1,962					
$38\frac{1}{2}$	719	1,029	1,430	2,243					
$39\frac{1}{2}$	792	1,120	1,577	2,597					
$40\frac{1}{2}$	870	1,220	1,750						
$41\frac{1}{2}$	952	1,330	1,958						
$42\frac{1}{2}$	1,040	1,453	2,212						
$43\frac{1}{2}$	1,133	1,593	2,526						
$44\frac{1}{2}$	1,234	1,756	2,922						
$45\frac{1}{2}$	1,343	1,948							
$46\frac{1}{2}$	1,464	2,178							
$47\frac{1}{2}$	1,599	2,460							
$48\frac{1}{2}$	1,754	2,808							
$49\frac{1}{2}$	1,932	3,248							
$50\frac{1}{2}$	2,143								
$51\frac{1}{2}$	2,397								
$52\frac{1}{2}$	2,706								
$53\frac{1}{2}$	3,089								
$54\frac{1}{2}$	3,572								

TABLE IV.—RESERVES FOR PENSIONED EMPLOYEES PER \$100 OF ANNUAL PENSION

Attained age of pensioner	Disability pensioners	Service pensioners	Attained age of pensioner	Attained age of pensioner	Disability pensioners	Service pensioners	Attained age of pensioner
	Hunter's table of mortality among disabled lives, 4 per cent interest	American men ultimate table of mortality, 4 per cent interest			Hunter's table of mortality among disabled lives, 4 per cent interest	American men ultimate table of mortality 4 per cent interest	
$x + \frac{1}{2}$	$100a^i_{x + \frac{1}{2}}$	$100a_{x + \frac{1}{2}}$	$x + \frac{1}{2}$	$x + \frac{1}{2}$	$100a^i_{x + \frac{1}{2}}$	$100a_{x + \frac{1}{2}}$	$x + \frac{1}{2}$
25½	632.20	.....	25½	65½	594.95	839.50	65½
26½	658.93	.....	26½	66½	590.38	807.43	66½
27½	683.34	.....	27½	67½	585.05	775.77	67½
28½	704.87	.....	28½	68½	578.74	744.57	68½
29½	722.58	.....	29½	69½	571.31	713.88	69½
30½	735.91	.....	30½	70½	562.58	683.73	70½
31½	745.25	.....	31½	71½	552.67	654.17	71½
32½	751.17	.....	32½	72½	541.40	625.22	72½
33½	754.43	.....	33½	73½	528.17	596.94	73½
34½	755.95	.....	34½	74½	512.96	569.34	74½
35½	756.36	1,754.63	35½	75½	495.60	542.46	75½
36½	755.94	1,731.46	36½	76½	475.62	516.34	76½
37½	755.02	1,707.56	37½	77½	452.87	490.98	77½
38½	755.53	1,682.90	38½	78½	427.90	466.38	78½
39½	750.95	1,657.50	39½	79½	401.48	442.58	79½
40½	747.15	1,631.38	40½	80½	374.39	419.62	80½
41½	742.39	1,604.56	41½	81½	347.51	397.48	81½
42½	736.98	1,577.08	42½	82½	321.08	376.15	82½
43½	731.26	1,548.94	43½	83½	294.90	355.64	83½
44½	725.18	1,520.16	44½	84½	268.79	335.96	84½
45½	718.68	1,490.80	45½	85½	242.82	317.14	85½
46½	712.11	1,460.86	46½	86½	217.34	299.12	86½
47½	705.04	1,430.38	47½	87½	192.87	281.89	87½
48½	697.38	1,399.41	48½	88½	169.71	265.45	88½
49½	689.46	1,367.98	49½	89½	147.60	249.82	89½
50½	681.22	1,336.14	50½	90½	126.04	234.98	90½
51½	672.57	1,303.90	51½	91½	105.38	220.83	91½
52½	663.86	1,271.34	52½	92½	87.23	207.48	92½
53½	655.42	1,238.48	53½	93½	71.40	194.90	93½
54½	647.65	1,205.36	54½	94½	56.87	182.72	94½
55½	640.63	1,172.07	55½	95½	.....	171.00	95½
56½	634.03	1,138.63	56½	96½	.....	159.42	96½
57½	627.89	1,105.10	57½	97½	.....	148.54	97½
58½	622.25	1,071.50	58½	98½	.....	136.41	98½
59½	617.18	1,037.92	59½	99½	.....	122.14	99½
60½	612.74	1,004.44	60½	100½	.....	109.69	100½
61½	609.05	971.04	61½	101½	.....	93.24	101½
62½	605.84	937.74	62½	102½	.....	66.02	102½
63½	602.46	904.70	63½				
64½	598.83	871.94	64½				

CHAPTER IX

FINANCIAL PLANS FOR EMPLOYEES

EMPLOYEE INVESTMENTS IN COMPANY SECURITIES

BY GLENN A. BOWERS, *Industrial Relations Counselors, Inc.*

In the field of employee investments, a cash reserve which may be drawn upon in times of emergency is perhaps first in importance. This need is filled for large numbers of workers through savings bank accounts. Home ownership is still widely regarded in some communities as a basic need for a place to live, although the changing housing conditions in congested centers have lessened the extent of this need. When one or both of these needs have been met, the employee may next turn his attention toward income-bearing securities. The issuance in recent years of corporate stocks in small denominations has made possible the entry of workers into the field of investment securities. It was as a part of this situation that employee stock ownership plans came into being.

Employees' stock ownership, like various other industrial relations projects, received a considerable impetus during the war. The widespread prosperity which industry enjoyed made stocks generally a desirable investment for the employee and new capital was needed in the expansion which accompanied increased business activity. The end of the World War and the subsequent business depression of 1921 terminated the special conditions underlying many stock subscription plans and it became necessary to adjust them to new situations.

In order to determine the place which an employees' stock subscription plan may hold in the industrial relations program of a given company it is essential that it be examined from several angles. Every stock purchase plan is inherently a part of a wider movement—the increasing dissemination of capital. A specific plan in order to be fully satisfactory must be sound financially both from the standpoint of the company and the employee subscribers. The latter should be able to compare it favorably with insurance and savings bank investments. Financial gain for the employee is not the only criterion of a successful plan however. There may be other advantages, less tangible but nevertheless real which operate for success. An employees' stock purchase plan in the last analysis can only be judged as a part of the general policy of the company whether it be viewed by the employee or employer. It may supply the last stone in a structure of good will and cooperation or it may be an isolated and uncoordinated experiment without any particular value.

Extent of the Practice. There are at least 400 companies in the United States which have employee stock purchase plans. In these companies,

among which are many of the largest employing corporations of the country, it may be roughly estimated that there are at least 1,000,000 employee stockholders.

This paper is based on information obtained through a continuing study of financial relations other than wages between employer and employee. Analysis of more than 150 stock subscription plans, most of which are still active, forms the basis for the points here presented. The companies involved cover eighteen industries throughout the United States. The companies represented are large rather than small in number of employees. Small companies do not, as a rule, have stock available to any but their officers. The large majority of the active plans were originated after 1917. These companies afford a fairly accurate cross section of the entire employee stock ownership situation.

The present analysis touches upon those aspects which are of particular interest to employers. There are several phases which have not yet been adequately explored. Among these are the effect on the total income of the employee, the extent of influence of such plans on thrift and the degree to which labor turnover is reduced, the relative number of eligible employees who participate, and the relationships which employee stock ownership plans have with pensions, group insurance and relief benefit plans.

Stock subscription plans present so many and such wide variations in their provisions that it is difficult to segregate them into clearly defined groups. For convenience they are here grouped according to (1) structural forms, and (2) forms of financial aid furnished by the company.

Structural Forms. The most common structural forms are:

1. Convertible savings plans, in which the funds deposited by employees by methods similar to those of ordinary savings plans are later employed for the purchase of stock.

2. Plans under which employees subscribe to consolidated funds, later receiving allotments of stock in accordance with their credits in the funds.

3. Plans under which employees complete their payments in one year or less.

4. Plans in which the payments are extended over periods greater than one year.

5. Plans based upon the principle of investment trusts.

Forms of Financial Aid. Financial aid rendered by employers takes the following principal forms:

1. Concession in price at which stock is sold to employees.

2. Direct contributions added to employees' subscriptions. These contributions usually are a certain percentage of the amount paid by employees.

3. Interest payment on savings later to be used in the purchase of stock.

4. Outright gifts of stock; also arrangements by which stock is paid for by dividends without any actual expenditure by the employee.

5. Additional dividends or bonuses to employee stockholders.

6. Arrangements under which employees who complete payments for stock are allowed to share in funds credited by the company to the account of employees who cancel their subscriptions.

7. Profit-sharing features. These are of great variety. Most of them are based upon the general principle of distributing fixed shares of company

profits among employee stockholders in proportion to their ownership of stock.

Forms in Use. The different structural forms and different forms of financial aid are not always mutually exclusive. A single plan may fall into more than one structural classification, or may include more than one type of financial aid.

Plans have been analyzed on the basis of the classifications given above in an effort to ascertain whether certain features are common to certain types of companies and the degree of popularity of the various methods. It is evident that the choice of one type of distribution or another has no apparent relation to the kind of business or the size of the company.

The weight of precedent is in favor of relatively long term subscriptions, sometimes combined with a convertible savings plan and sometimes with subscription to a common fund. Relatively few companies offer their employees an opportunity to invest either in a convertible savings fund or a consolidated fund out of which payments are made for stock later.

Methods by which companies furnish financial support to stock subscription plans are also difficult to classify, both because of the wide variety of these methods and because of the fact that sometimes the practice of a particular company is not clearly defined.

In so far as it is possible to distinguish prevailing practices, no one type of financial aid is generally in use. More companies pay a bonus or extra dividend, however, than give any other sort of assistance and fewer allow employee subscribers who withdraw before the maturity of the plan to share in the fund created by company contributions to subscribers.

Types of securities offered by companies having stock subscription plans range all the way from common stock to employees' stock in special investment trusts. Between these two extremes are found various kinds of preferred and debenture stock, some of them carrying voting rights, others without voting rights and not subject to transfer. The information with respect to voting rights of employees is insufficient to determine definitely the preference for voting or non-voting stock. It is our belief, however, that relatively few plans do not extend voting rights with stock.

Terms of subscription and payment show wide variation, being dependent partly upon the structural type of plan in effect, the class of security offered, the eligibility requirements, and the individual ideas of the management.

One of the most common variations concerns the periods during which subscriptions are received. Many companies hold the subscription books open for a limited period each year; others allow subscriptions to be made at any time or as soon as each individual employee becomes eligible.

With respect to eligibility a variety of provisions are also found. Of the plans analyzed almost one-half specifically throw the stock subscription open to all employees. Companies which limit eligibility, do so usually through a service requirement, one year's service being the most common with six months second in prevalence. A few plans prescribe service requirements of two years or even five years. Besides the limits to eligibility based upon length of service, there are occasionally to be found some special limitations

as, for example, when the stock is offered only to officers or to selected lists of employees.

Certain companies limit the proportion of earnings which an employee may invest through the stock subscription plan; but this is not customary.

An important variation concerns the method of payment. Most companies that offer stock to the rank and file of the working force permit payment through payroll deductions; a few prescribe this as the only method; while payroll deduction is the favorite plan, other methods of payment are frequently to be found. Payment in cash at the time the subscription is made is permitted by many companies; it is rarely if ever required. Several companies require that a certain percentage of the purchase price be paid in cash at the time of the subscription and that the rest be paid in instalments, sometimes secured by notes.

There are numerous methods of crediting interest, dividends or extra payments by the employer to the subscriber's account, thus hastening his payment or reducing the amount which he must pay in cash or have deducted from his earnings.

Extent of Participation. There is a limited number of companies for which data are available showing the extent to which their employees participate in stock purchase plans. Participation is defined as buying or holding stock. Two-thirds of these companies have had stock subscription plans for five years or more. In the majority of this limited group more than 30 per cent of their eligible employees are participants under their stock subscription plans. The combination of at least five years continued operation with this degree of participation indicates a considerable measure of success.

There is some reason to suppose that the employees of the smaller companies have responded more readily to stock offers than have those of large companies, although the samples are too small to warrant definite conclusions. All but one of the companies of less than 1,000 employees about which we have details report a participation of 30 per cent or more. One-half of the companies employing from 1,000 to 5,000 workers have participating groups of 30 per cent or more of the employees. On the other hand, out of the thirteen companies employing 5,000 or more workers within the scope of this study only four companies have general participation.

Benefits to Be Secured. The statements of many executives concerning company experience with employee stock ownership plans combined with our own analysis of plans furnish the basis for some fairly definite conclusions as to what stock purchase plans may and may not be expected to accomplish. In addition it is possible to determine in a measure the desirability of some provisions over others.

Some of the benefits of stock subscription plans which either have been secured actually or which possibly may be secured may be noted. Obviously the same advantages will not be secured by every company nor are the ends sought by all employers the same; neither is it true that the results are in all instances peculiar to the operation of stock subscription plans nor best obtained by them.

1. Stock subscription, by providing a means of saving and investing money, encourages thrift. This result may be secured most effectively when

the terms of the stock plan permit payment of subscriptions by instalments deducted from the subscriber's wage or salary. From the standpoint of the employer, the workman who saves his money, supports his family in comfort and maintains accumulated funds to tide him over periods of illness or other adversity, is likely to be more steady and more efficient than is the man who spends his money as fast as he earns it. It is true that there is a conceivable argument to the contrary, based upon the fact that an employee who has saved money has a greater element of economic endurance in the event of a strike or a lockout than one who lives from hand to mouth, but this argument is seldom advanced by liberal-minded employers. Another counter argument occasionally heard is that thrift on the part of the laboring population will reduce expenditures for commodities and services, and thus injure business. This contention loses weight through the obvious facts that accumulated savings will be spent sometime, and that business probably profits more when wage earners are able to spend moderately, through periods of prosperity and depression, than when their expenditures are lavish during business booms and meager in times of widespread unemployment.

The employee who has accumulated savings is thereby made more self-reliant financially. Neither the employer nor the community need be called on in times of unemployment or illness. If continued over a considerable period such savings will supplement and may conceivably supplant the industrial pension.

2. A stock plan, if it adds to the earnings of employees and helps convince them that the employer is interested in their prosperity, should strengthen the morale of the working forces.

3. There is a general belief that employee stock ownership reduces labor turnover. This opinion, while it is difficult to prove with tangible data, is probably well grounded in the experience of some companies. Certainly it is logical to suppose that the employee who either owns stock or is paying for it, and who is thereby the recipient of direct financial advantages, will be less likely to leave the service of the company for trivial or insufficient reasons than would the generality of employees who lacked these incentives.

4. Stock participation ought to have the effect of attracting and holding labor which ranks above the average in stability and responsibility. The worker who deliberately seeks employment with a company which has a stock subscription plan rather than with a company which has no plan of the kind, may fairly be expected to remain with the company and to do his work in such a way that he will not lose his job.

5. The workman who owns stock of the company by which he is employed has to that extent a financial interest in the business. This fact should logically be expected to improve efficiency and economy by making the employee realize that the gains and losses of the company are to some extent his own. While the experience of some companies appears to bear out this argument, too much dependence should not be placed upon the effects of employee stock participation as reflected in efficiency and economy in any particular company. The dividends paid to the average employee stockholder are likely to be so low that they make up only a small part of his total

income, and considerations affecting this small part are unlikely to weigh heavily against things which he considers of more importance.

6. Whether or not the individual employee stockholder considers himself enough of a partner in his employer's business to be vitally interested in its success or failure, there is no question that such an employee has definitely become a participant in a capitalistic enterprise. This fact may be expected to give him a more conservative point of view toward industry and society generally; certainly such a workman cannot consistently support communistic or other extremely radical ideas.

7. A stock subscription plan affords one medium for giving employees first-hand experience with investments. This advantage may, however, be lessened or even reversed if the plan is drawn up or administered in such a way that the employee's stock is not subject to normal economic conditions.

8. Employee stock ownership secures a wider distribution of company stock than would otherwise be possible, since ordinarily the number of employee stockholders is added to the total number of outside stockholders without reducing the latter. This wide distribution of stock may be of benefit to the employer by lessening price fluctuations and by making it more difficult for interests hostile to the existing management to secure control of the company.

9. Investment by workers in the securities of employing corporations is likely to draw upon sources of capital formerly not available for industry. This is important in view of the fact that high income surtaxes have driven much of the money of large investors out of the industrial field.

10. One of the most important economic developments of recent years is the trend toward popular ownership of industry through wide diffusion of securities. It is generally believed that this trend is desirable and that it is having a stabilizing effect upon industry. Employee stock ownership serves as an aid to this general trend and therefore works to the advantage of industry in general.

Reasons for Lack of Success. There are undoubtedly companies in which none of the foregoing benefits would be obtained from an employee stock subscription offer. The following are some of the reasons which militate against the success of stock plans:

1. The possible gain to the employer through employee stock participation may not be sufficient to justify the cost of a particular form of stock subscription plan or of any such plan.

2. In some companies there is no practicable way of securing stock for distribution to employees. The supply of floating stock in the market may be limited or held at prices which make its purchase uneconomical; nor is every company in a position to issue new stock to be used in a subscription plan.

3. Certain companies have no security that is sufficiently safe and stable to make it suitable for investment by the workingman. There may even be a moral wrong involved in encouraging wage earners to buy securities which either involve excessive risk or are subject to violent fluctuations in price.

4. The present owners of many companies prefer to have the stock closely held by a few individuals or families. If there is a sound reason for this

preference, it naturally negatives any arguments in favor of distributing the stock to the rank and file of employees.

5. The laborers of some companies shift so frequently that only a comparatively small number could benefit by a stock subscription plan. This condition applies particularly in most construction companies. To the extent that it cannot be overcome, it would seem to furnish a valid reason for offering stock, only to the nucleus of steady employees.

6. Some corporations have had stock subscription plans which have failed under circumstances which seem to make the renewal of the experiment unwise. It is probable that on this account some companies ought not to promote stock subscription by employees, at least until after a considerable lapse of time. This is a point which needs to be decided by management on the basis of actual conditions.

Emphasis on Security. The Employee Investment Trust. Security is a fundamental need in employee investments. By virtue of their usually limited resources, employees can ill afford to take chances which may result in loss to them. Speculative investment is all right for those who can stand losses if incurred, but people in moderate circumstances do better as a rule by adhering to conservative saving programs. Thus employee stock ownership is by its very nature an institution devoted to thrift and savings purposes, although it has sometimes unfortunately departed from these objectives.

For several years the importance of safety in employee stock holdings has been stressed by industrialists and outside observers. This is attested by the large number of plans which provide either preferred stock or special employees stock well secured and by the various bonuses which extend the margin of security for the sums paid by employees. Because of his key position in the origin and administration of an employees investment plan, the responsibility for the ultimate outcome rests squarely on the employer. Since 1927 especially, the emphasis placed upon safety of employees investments has brought into being a new type of employees' security, namely, certificates or shares of stock of investment trusts created for employees of particular companies. This type, represented by the plan of the Dodge Manufacturing Company and the General Electric Securities Corporation, applies to employees' investments the principle of diversification which characterizes the investment trust development. This kind of plan has considerable promise, where the practical difficulties can be overcome, as a means of meeting the situation in companies whose stock, common or preferred, may be unusually speculative in character. It is also probable that a greater appreciation in investment values would result through an investment trust skillfully managed than through preferred stock of the employees' own companies.

Employee stock ownership is entering upon its second decade as a widespread movement. Many of the early plans weathered the 1921 deflation, while others subsequently formed have been built upon the experiences of their predecessors. The second test period began with the fall of stock prices in October, 1929, and will continue until the upward swing of the securities market has gotten well under way.

It was inevitable that employees under the wide variety of plans have had both fortunate and unfortunate experiences. Some have sold their holdings at a profitable figure during the rise in stock prices; others have unloaded, voluntarily or through force of circumstances, on the downward swing at substantial losses. These urges to sell usually grow out of the price fluctuations to the disregard of actual earnings of the stock, which may still justify the price originally paid. It might easily have occurred as a result of the recent misfortunes to many employees who held stocks of their own companies that the entire movement had come under disrepute. Notwithstanding, however, the substantial losses in some cases and the varied experience, the questions raised by critical observers are not directed at the continued existence and extension of the movement but rather at the manner of its continuance. Few now doubt the positive net advantages which have prevailed, but many have suspicions that adequate protection has not yet been taken against the element of risk.

Type of Stock to Be Offered. In the last analysis the determination of the type of stock to be offered to employees depends largely upon the circumstances of the particular company. A few generalizations, however, may be advanced with some conviction.

Participation in control and in the profits and losses of the business ordinarily can be secured to the fullest extent through the possession of common stock. Under the customary form of corporate organization this stock carries voting rights and its dividends are neither limited nor guaranteed. The holding of voting common stock makes the employee an actual partner in the ownership of the business and entitles him to a pro rata share in its gains and losses to the extent of his holdings. It gives him a personal part even though of limited influence in the control of the company and the selection of the management. The importance of the last mentioned consideration is largely psychological, since in the typical large corporation it seems unlikely that employee stockholders at any time in the near future will be able to exercise any real control over management; and since, moreover, with the stock widely distributed the management is to a considerable extent self-perpetuating and independent of scattered shareholders whether they be employees or outsiders. It is true, however, that the voting privilege, if it be regarded as important, may also accompany some preferred stocks.

Against the advantage of common stock distribution there must be set up some actual or potential disadvantages. First and of vital importance among these unfavorable factors is the instability of many common stocks. Both the price and the dividend rate may vary widely. Even more serious than instability of price is the risk which exists in some companies that the common stock will permanently lose a large part of its value or even become worthless as a result of bankruptcy or other business vicissitudes. The importance of a stable investment cannot be too heavily stressed.

No reasonable doubt exists that employees are more inclined to speculate with common stocks than with preferred stocks. The usual wide fluctuations of the former place temptations to sell before the holder when he sees a good profit. Selling on the way up, he has been known to regret his sales, buy in again near the top for a further rise and eventually see his stock go down

below his original purchase price. Again it takes a courageous employee to hold his stock through the bottom swing of the price cycle. All too frequently he loses heart and sells when he sees his values slipping rapidly away without waiting for his stock to come back to a reasonable price level.

Between the advantages and disadvantages of common stock as an offering to employees, the decision should be made largely on the basis of actual conditions. Common stock is widely regarded as a satisfactory security, provided its stability of value and earning power and its freedom from risk make it in a particular company the kind of a share that can be offered to workmen with reasonable assurance of safety. However, comparatively few companies in the United States have common stock which fulfills these requirements.

Many corporations, the common stock of which is unsuitable for subscription by employees, have preferred stock which may be offered without hesitation. Preferred stock as an employee's investment has definite advantages. In general its dividends are fixed and guaranteed, and thus the element of investment is emphasized and the element of speculation reduced. On the other hand, ownership of preferred stock does not ordinarily afford the employee as great a degree of participation in the enterprise as does the holding of common stock. His risks and his opportunities for profit are both reduced. Customarily he has no vote and thus exercises no control, even theoretically, over the management. The last named disadvantage, however, does not exist in all companies; sometimes the preferred stock has voting rights equal to those of the common stock.

In deciding between common and preferred stock the advantages and disadvantages of each should be balanced carefully. Sometimes the decision will be influenced by the purposes of the employer in initiating a stock subscription plan. If his desire is primarily to interest the employees in the business and to cause them to feel that its prosperity or misfortune is their own, he will naturally lean toward the selling of common stock. On the other hand, if he is influenced in the main by the desire to encourage thrift, he is likely to favor preferred stock and be willing to give up the greater interest presumably aroused by the ownership of common. The decision may also be influenced in part by the type of employees to whom the stock is sold; that is, whether they are wage earners or supervisors, Americans or foreigners, skilled or unskilled.

Instead of the regular issues of common and preferred stock, some companies have issued special stocks solely for distribution to employees. Sometimes these stocks are little more than certificates entitling the holder to shares of the company earnings. It is common to make these special employees' stocks non-transferable or to require that they be sold back to the company or exchanged for different securities if the holder leaves the service. Of special employees' stock it may in general be stated that the issuance of such securities instead of regular stock requires affirmative justification, since ordinarily there is a distinct advantage in giving the employee to understand that the shares he owns are just like those of the other common or preferred stockholders.

Main Features of Structural Plans. Various considerations must be taken into account in actually formulating a stock subscription plan.

1. *Convertible Savings Plan.* Plans of this type usually lay emphasis upon the savings features. The employee is encouraged to subscribe to savings certificates or other evidences of investment and these certificates later are transferable into stock of the company, sometimes with alternative investments for those who prefer them. A plan of this kind may readily be used to encourage home ownership or other forms of economic independence in addition to stock subscription. It has the advantage of furnishing a convenient means of inducing the wage earner to save his money without the appearance of committing himself to the purchase of stock or to a long term subscription. On the other hand, a convertible savings plan may lack some of the advantages of a direct stock subscription and may therefore be less effective in enlisting the interest of the employees in the success of the company. Much depends upon the character of the administration of the fund. The trustees or other administrators need to be selected with care, in order that the employees' money may both be kept safe and be handled wisely. This applies equally to a plan providing for a consolidated fund.

2. *Subscription to Consolidated Fund.* A fund administered by trustees and used for the purchase of stock for distribution to employee subscribers in proportion to their credits has the advantage of easy control and comparatively simple bookkeeping. As worked out in some companies a fund of this kind has an additional advantage in that it can be invested in stock at times of low prices or loaned temporarily on interest when this seems the most profitable course. From the standpoint of the employee there is little difference between subscription to a combined fund and direct payment for stock on the installment plan; in fact, it is likely that the average employee subscriber does not know the difference.

3. *Payments during One Year or Less.* Direct purchase of stock with the payments extended over periods of one year or less has been a method employed by relatively few companies. There is no fundamental difference between this method and that of subscriptions extended over longer periods. The short time subscriptions are somewhat easier to control and involve less danger of wide fluctuation in stock prices during the time of payment. It may, however, contain a greater element of encouraging speculation than the long term plan, since the subscriber secures control of his shares in a comparatively brief time. From the standpoint of the employee the short term has the advantage that it does not commit him to fixed payments over a long period of years.

4. *Long-term Subscription Payments.* Stock subscription payments extended over relatively long periods—from two to five years are common subscription terms—have the advantage that they are likely to induce fixed habits of thrift and saving. A workman who subscribes every payday for three or five years is less likely to give up his habits of thrift than one who completes his payments in a few months or a year. Likewise it is probable that the employee who receives a fair sized block of stock at the expiration of a considerable period is less likely to sell it than the one who gets a smaller amount after a short time. Then, too, the dividends on the larger holding

are sufficient to be appreciated, whereas the income from stock paid for in a year or less is likely to be so small that the subscriber will consider it of little account. This type of plan is open to the possible objection that it commits the employee to a fixed schedule of payments during a long period, in the course of which his economic conditions may change. This objection can be neutralized by providing easy terms of alteration, withdrawal or termination of subscriptions.

5. *Employees' Investment Trusts.* The fifth type of plan may have any one of the methods of payment found in the usual employee stock plans. Its principal characteristic is the diversification of investments as compared with the security of the employees' own company. An investment trust for the exclusive participation of employees of the company which sets up the plan provides a medium for the purchase and sale of securities of other companies. Such a trust can be no sounder than its management but when wisely administered certain weaknesses inherent in the ordinary types of plans may be avoided. The first of these defects, as already indicated, is that of having the employees' "eggs all in one basket."

The second evil grows out of the fact that some employers use these plans as unwarranted pressure upon their employees to bind them to the company when wages and other working conditions might influence them to seek positions elsewhere. This evil may be avoided in fact by the maintenance of wage levels and working conditions equal to or better than the prevailing standards of the particular industry and community. However, it is difficult to avoid the appearance of undue influence and paternalism if a bonus is granted with a string on it, namely, that they remain with the company. If, on the other hand, the company recognizes a real value in having employees who save money there may possibly be sound reason for it to compensate the employee who saves accordingly through a bonus which places a premium on saving. Such a bonus logically is based on the amount invested under the plan and not on length of service or on earnings from his job.

It is contended that the following principles governing employees' investment trusts will go far to offset the weaknesses above mentioned:

a. The diversification of securities purchased by employees' investments and the management of these funds in accordance with sound financial practice. This involves complete independence of employees' funds from the funds of the company in which they work and the management of investments by an outside financial institution engaged by the board and responsible to the employees investment corporation.

b. The company or corporation set up to handle these investments shall virtually be a cooperative enterprise of the employee investors themselves. In this connection it is important, however, that where the name of the employing company is used or otherwise involved the officers of such company must protect its reputation before the public. Furthermore, there exists a certain moral responsibility upon the creators of a plan even though it be a cooperative one, for its sound administration.

The five structural types just outlined are not of necessity mutually exclusive, since subscriptions to convertible savings plans, to consolidated

funds, or to investment trusts may be by means of either long or short term payments.

Administration of Plans. Eligibility. A service requirement for eligibility to subscribe for stock is desirable, since in most companies the bulk of the labor turnover is among the very short term employees, and by excluding these men much bookkeeping and many cancellations may be avoided. On the other hand, there is ordinarily no occasion for a particularly long service requirement. A stock plan open to employees after one year's service, or perhaps even after six months, will not be encumbered ordinarily with subscriptions of "floaters."

Some companies limit their stock subscription plans to certain types of employees. For example, a company may exclude all except the rank and file of the workmen, or, on the other hand, it may exclude all except officials. These distinctions need to be justified by the conditions or purposes of the specific company or by the nature of the security offered; they are not demanded by any facts or theories applicable to stock plans in general.

Limits to Subscriptions. It is probably desirable to limit the current investments of employees to a reasonable percentage of their earnings between 15 and 25 per cent. It is true that the average workman is inclined to save too little rather than too much, but the occasional miser ought not to be encouraged to lay aside a proportion of his income great enough to cut down unduly his expenditures for necessities and comforts. Even if it were wise for an employee to save one-third or one-half of his income, he ought not to put this amount into a single security.

Some companies set an absolute limit on the amount of stock to which any employee, regardless of his earnings, may subscribe. There appears no general justification for this practice, but it may be advisable in a particular company (1) if the amount of stock available is limited; (2) if the company gives liberal financial aid and it is thought that there is no occasion to furnish this aid in unreasonable amounts; or, (3) if the lack of an absolute maximum would give the official class too great a proportionate participation in the plan.

Methods of Payment. Experience and reason both give approval to the system of payment by deductions from wages or salaries. This "painless" method of saving money generally is satisfactory to the employees themselves and saves much bookkeeping and collecting by the employer. Also, it is a strong incentive to thrift through systematic saving. If a man wants to pay his instalments in cash or even settle his account in full, it is difficult, however, to justify a refusal, although in some cases the privilege of paying up accounts and securing possession of stock before the expiration of the regular term has encouraged speculation, since employees have seen the chance to profit by raising the money to buy their stock outright and then selling it in the market. When this danger exists the employer may fairly require that payment be made only by the regular instalment system.

Cash or Stock Withdrawal. The working man unaccustomed to stock ownership or investment is likely to be suspicious of a plan which seems to tie up his money for a period which he cannot control. In recognition of this fact most companies in initiating stock subscription plans make liberal provision for withdrawal. Under some plans the subscriber is allowed to withdraw

his money with interest at any time before he has actually received stock certificates; in others the employer reserves the right to furnish stock or cash at his option. The latter alternative serves to prevent possible financial embarrassment to the company if many subscribers withdraw at one time.

Although a great deal has been said about the use of employee stock ownership as an agency for holding the employee to his job in case of strike against the company or in face of low wages or unsatisfactory working conditions, a thorough analysis of the improvement fails to support these criticisms. If there have been instances where undue pressure was placed upon the employee through the instrument of such plans they are but unfortunate exceptions to the general practice. Even the most abstruse employer cannot fail to foresee that the use of the plan as a threat over employees would result in the loss of constructive values which lead toward financial independence through thrift. It is therefore generally regarded as desirable to allow liberal and easy provisions for withdrawal by the employee from the plan.

Guarantees against Loss. Certain companies not only permit the cancelling of subscriptions before the term of payment is completed, but attempt to guarantee employee stockholders against loss even after they have received their shares. In attempting this kind of a guarantee a company may agree to take back the stock at par or to buy it at any time at the price for which the employee purchased it. A guarantee of this kind would seem to be unwise in at least two respects: (1) it is an attempt to bind a future board of directors perhaps illegally to a predetermined policy; and (2) it involves the danger of teaching the workmen something about economics which is not true: *viz.*, that a man can be a partner in a business enterprise without running any of the risks of the business.

Sale or Transfer of Stock. It is generally best to allow the employee stockholder to sell his stock freely in the market after he has paid for and received it. Some companies limit this privilege either by issuing non-transferable certificates or by binding the employee to offer the stock to the company before he sells it to an outsider. These limitations of the privilege of sale may be justified only if warranted by peculiar conditions. In the absence of this justification, there seems to be no excuse for selling the employee stock "with a string to it." It must be admitted, however, that one of the purposes of most employers who sell stock to their workmen is to secure the advantages of a permanent body of employee stockholders.

Extra Payments for Retaining Ownership. The chief value of stock purchase lies in continued ownership. However, the returns from securities in which the element of safety is high are too low to be particularly attractive to the workingman; there is danger that he will sell his shares as soon as they get into his hands and attempt to draw larger returns by reinvestment. This is particularly true in the case of some companies which, although stable and prosperous, make a practice of paying unusually low dividends.

Several companies have solved this problem with greater or less degree of success by paying special bonuses or extra dividends to employees who remain in the service and retain their shares. Sometimes these extra payments are limited to a fixed term of years; at other times they are for an indefinite period or until revoked by the management. These extra payments

are justified as they secure the desired result of inducing employees to hold their stock.

In this connection, the company initiating a stock subscription plan ought to consider how, if at all, the financial incentive should be *divided between aid in purchasing and special inducements for holding stock*. A company might to some extent defeat its own purpose if, through liberal aid in purchasing, it induced large numbers of its employees to subscribe for stock, and if then on account of low dividends most of these same employees should sell their stock as soon as they received it. In such a situation the company might find that it had spent its money without securing all the advantages which it desired, and which might have been gained by a division of financial aid between contributions toward purchase and extra payments after the stock had been allotted.

Company contributions toward stock subscription plans usually have been made through one or more of the following methods:

Concession in Price. Concessions which are given range all the way from one or two points to a price so low as to constitute practically a gift of the stock. Moderate price concessions do two things: (1) they take the place of a direct contribution toward the employee's savings, and (2) they protect the subscriber to a degree against declines in the price of the stock. The latter result is important, particularly if the stock offered is subject to considerable variations in the market.

Direct Contributions. Some companies pay a direct money contribution into employees' stock purchasing fund. Occasionally a stock subscription plan provides for direct contributions and concessions in price at the same time. The two methods are similar in principle. Conditions in a particular company may serve as the determining factor in a choice between them. Care should be taken that neither the amount of company assistance nor the manner in which it is offered warrant the charge of paternalism.

Interest on Savings. If stock ownership and participation in dividends are withheld until payment is completed, the employee should be paid reasonable interest on the balance in his account. This practice is almost universal, particularly in plans of the convertible savings type. The interest upon balances may be one of the most effective incentives for continuing participation.

Gifts of Stock. A few companies have plans in which to all intents and purposes the stock is given to the employee without payment. Plans of this kind are exceptional and require some specific justification. They have not been considered extensively in this paper.

Participation in "Jack-pot." In the operation of any stock subscription plan there will be some cancellations and withdrawals. When the plan is financed in part by direct contribution from the company, the question arises as to what shall be done with the payments which have been made for the account of those subscribers who do not continue until the maturity of the plan. Some companies divide this indeterminate amount among the survivors; others withdraw it from the fund if there is one. There is no exclusive argument for either method. If subscribers who cancel their accounts do not participate in the money contributed by the company it is difficult to see why the employer is required to give this same money to other subscribers in addition to that which they are entitled. The privilege of participating in the

jack-pot is in fact an increase in the liberality of the stock subscription plan and is to be justified, as are other liberal features, on the basis of the beneficial results secured by the company. It is true that the argument sometimes is heard that if the employer recovers the contributions made for the accounts of subscribers who withdraw, he may be tempted to discharge employees and thus save money. In the case of most corporations this argument is somewhat far-fetched, and it could be counterbalanced by the contention, directly opposite and equally far-fetched, that if the jack-pot is divided among the survivors, foremen, and other participants in the stock plan might scheme to get their fellow employees forced out of employment in order that more might be left in the fund which they would share.

Methods of Sale. Otherwise inexplicable differences in the degree of success attained by stock subscription plans often may be accounted for by the methods by which the stock is sold. A stock subscription plan, particularly a new one, is unlikely to meet with a widespread response unless it is presented to the employees intelligently and with some degree of enthusiasm by the management. On the other hand, there is danger that officials may promote a stock subscription plan with a degree of insistence that approaches coercion. This type of selling is likely to create a bad impression and may even be ethically wrong if its effect is to induce employees to subscribe unwillingly or to a greater extent than they can afford. In initiating a plan of stock subscription much attention should be given to the selling methods that are to be adopted and to the explaining of these selling methods to the officials who are in direct contact with the working force.

In the final analysis the sale of company securities to employees may succeed or fail for reasons entirely beyond the conditions of the plan itself. The confidence of the employees in the integrity of the management may be so deep seated and the morale so high that any plan for the sale of stock to employees would meet with marked success no matter what its defects. On the other hand, the most ideal plan will be doomed to failure if launched in an atmosphere of distrust and low employee morale.

SAVINGS AND THRIFT PLANS FOR EMPLOYEES

BY H. GILBERT FRANCKE, *Consultant on Labor Relations*

By far the largest part of the literature on employee thrift and savings consists of detailed descriptions of plans that are in force in individual plants, how they are operated, what per cent of the employees have taken advantage of the plan, how the plan has grown from a modest number of dollars to a financial giant and what many advantages can be found in these plans. These articles have, quite naturally, neglected to put much emphasis on the negative side of the schemes and it has been left to the imagination of the reader to determine for himself what, if any, the disadvantages might be. Surprisingly little has been written on the general subject and, therefore, an attempt will be made in this article to list the principles which are back of any thrift plan, to point out some of the pitfalls that attend the use of such

plans and to enumerate the different kinds of plans that are adaptable to industry today.

Security of Funds the First Essential. It is very obvious that the first principle of any thrift plan must be the security of the funds collected from employees. In the many different types of thrift plans the security varies from the often quite hazardous plan of selling a single common stock to employees at market price, or slightly under, to a safe and sane pay roll deduction plan where the funds are deposited in savings banks to the credit of the individual employees.

In determining whether a savings plan has sufficient security, other factors than the earnings of the company and the fluctuations of the market price of the stock must be considered. In the first place, the average employee is wholly dependent for his livelihood on his job, in other words, he is already carrying, as far as he is concerned, a big risk in the enterprise in which he is engaged. Therefore, the question whether this risk should be increased by encouraging the employee to invest his funds in the same enterprise must be answered by an impartial review of the particular situation. In the second place, the need of security will vary with the financial standing of the employees for whom a savings plan is devised. If it is for managerial employees, who, presumably, have some of their funds invested in other enterprises and have a reasonable amount of life insurance other than term or group insurance, then the security of a savings plan takes on a different aspect than if the plan is primarily for employees who are making possibly their first venture in systematic savings.

Importance of Simplicity of Plan. Next in importance to security comes simplicity of any savings plan. There is no question but that in the minds of the average industrial worker a tremendous amount of mystery surrounds all financial matters. Balance sheets, bond issues, surplus, stocks, sinking funds, depreciation, etc., are all names to conjure with and to convey to many persons the thought of juggled figures. Therefore, a straightforward and simple savings plan will be understood and appreciated, while an elaborate one, surrounded by magnificent legal terminology, will arouse suspicion on the part of the average employee.

Flexibility. Any savings plan must be adaptable to the many changing conditions that may confront the persons who are using it. A too rigid plan will work hardships on employees who, in good faith, undertake to save systematically but who encounter things beyond their control. Therefore, a plan must provide for easy withdrawal of funds, for intermittent payments and for cancellation of agreements to participate.

Convenience. Finally, a plan must be convenient for employees. One that puts the burden on the employees to make periodic payments to a treasurer, or through collectors in the plant, will not function as effectively as one that provides for pay roll deductions by the company. The comparatively small amount of work that must be done by the pay roll department is distinctly worth while in causing more widespread participation by the employees in any savings plan.

Types of Plans. There exists today, in actual practice in industry, a wide variety of employee savings plans and a brief description of these follows, but

no effort will be made to say which type is best adapted to a particular case as the purpose to be accomplished and local conditions must determine which one is to be adopted.

The simplest form of thrift plan is the one where the company merely acts as the collecting agent for one, or for a number, of savings banks by deducting specified amounts from the pay of those persons who so authorize the company through a signed order and deposits the money to the account of the individuals who take part in the plan. Thereupon, the responsibility of the company ceases and the employee is free to do what he desires with his savings bank account.

A variation of the scheme is to replace pay roll deductions by banking machines, which sell stamps that are redeemable at a specified bank for a savings account. Although these machines relieve a company of all of the responsibility they do not insure the same regularity of saving that the pay roll deduction plan provides.

Next comes a similar plan where the money collected from the pay roll is used for two purposes: buying savings bank life insurance in the states where the law permits and building up a savings account. The added feature of life insurance supplies one of the greatest needs of the average employee, namely, protection for his family while he is also saving and does so at a minimum of cost.

The sale of common or preferred stocks to employees on an easy payment plan at less than market price, or with a premium after a certain number of years, is one of the most common forms of thrift plans. Some of the attendant hazards have already been mentioned and deserve careful consideration. These plans are often inaugurated as thrift plans with the best of intentions, but are received by employees as a "get-rich-quick" proposition. In other words, employees who subscribe to some of these plans are thinking more of the possibility of increased stock market values of their purchase than they are of systematic savings. On the other hand, there are unquestionably great advantages of having large numbers of employees who are stockholders and who are, therefore, more vitally interested in the success of an enterprise. This may be manifested in a number of directions—decreased labor turnover, improvement in quality of output, reductions in manufacturing costs, savings in waste, and improved morale.

A natural development of plans of selling individual stocks to employees has been that of selling shares in investment trusts with the advantage of spreading the risk for those who can least afford the risk of an individual stock and with the disadvantage of the responsibility of administering the trust. But the advantage far outweighs the disadvantage in concerns that are sufficiently large to provide the best possible financial administration.

The term profit sharing has covered a multitude of things, some of which might be called sins. It is certain, however, that it should not be classed under thrift plans as it is either a special reward for successful efforts or an integral part of a method of financial remuneration. In like manner "economy dividends" the merits and demerits of which are not to be discussed here, do not come under the subject of this article but rather belong under a discussion of bonus plans as distinct from thrift plans.

The credit union provides one of the best devices for encouraging thrift among employees as evidenced by the adoption of credit union laws in thirty-three states of the Union and by the tremendous accumulation of funds in credit unions. It provides for systematic savings in varying amounts so that the lowest paid and the highest paid employee can save at a rate that fits his particular situation. It is supervised by competent authorities other than the employer and, therefore, does not in any way complicate the "employee-employer" relationship. It is sufficiently flexible to permit of activities that will cover the financial problems of the average employee, such as savings for home building, for making large payments on coal, taxes, education, etc., and for emergencies such as serious illness, that often financially cripple an employee, who is unprepared to meet them. In addition to providing savings for these and similar purposes, it establishes the credit of persons who are unable to get credit from other sources without paying exorbitant rates of interest. It does not, however, provide the privacy for loans desired by some employees. To a certain extent the voluntary building and loan association gives some of the advantages of the credit union and both are an extremely useful educational device for teaching some of the fundamentals of financial matters to employees who must take part in their administration and, through them, to the rank and file of the workers.

Although they do not, strictly speaking, fall into the category of savings plans, a number of closely related subjects should be briefly mentioned, both because they divert some of the funds of an employee from the channels of saving and because they take care of some of the elements in a well thought out savings program. For example, group life insurance paid for in some part by the employees is not saving as there is no cash value to the individual policy, but group life insurance does supply one of the first elements of saving, namely, protection.

Employee participation in mutual benefit associations to cover loss of pay from sickness and pension systems, both contributory and non-contributory, play their part in decreasing the hazards to employees and unemployment funds, although quite in their infancy in American industry, will continue to grow and will aid in solving the greatest problem that confronts employees today.

Results of Thrift Plans. What then are the general results either to employee or employer of a sound saving and thrift plan—results, all of which will not be found in any one plan, but which do appear in a general survey of a number of plans?

In the first place, definite channels for saving will greatly increase the number of persons who save and will include many persons who were absolutely ignorant of their ability to save. This, in turn, will lead to a sense of accomplishment which can only react to make the saver a more competent person.

Systematic saving means systematic spending and this can only be accomplished by budgeting and well ordered finances mean better home environment and furnishings.

Home building and home owning, a feature that develops a backbone of valuable employees to any organization, is greatly encouraged by any thrift plan that deals in real estate mortgages.

Educational opportunities for the individuals who save, or for members of their families, are greatly increased by thrift plans.

Credit unions develop the credit of the mass of people on the basis of character and accomplishment as well as on the basis of financial worth.

Thrift plans decrease the field for the loan shark who can exact the pound of flesh from the unfortunate individual who, through pride or through ignorance, is unable to obtain emergency funds elsewhere.

Wage attachments, a nuisance to an employer and often a tragedy to the employee, are reduced through savings and thrift plans.

In conclusion, any thrift plan that meets the major requirements of soundness, simplicity, flexibility, and convenience, will be beneficial to both employer and employee and, therefore, beneficial to society in general as well.

THE CREDIT UNION ITS PRESENT AND POTENTIAL SERVICE TO INDUSTRY

By ROY F. BERGENGREN, *Executive Secretary, Credit Union National Extension Bureau*

The oldest Massachusetts credit union was established in 1911. The Massachusetts credit union law was enacted in 1909 and thirty-four other states have now enacted similar laws. Back of the Massachusetts experience is the history of successful credit union operation in Quebec, dating from 1900, and back of that a very substantial development in Europe, dating from the early experimentation by Raiffeisen in Germany in 1848. There are now over fifty thousand credit unions in Germany alone, and the spread of the credit union is world wide.

What Is a Credit Union? A credit union is a cooperative society, organized within, and limited in its operations to, a specific group of people operating under the supervision of the state banking department (from which department it gets its permit to operate) and self-managed, serving two purposes: (1) providing its members with an easy and convenient system for saving money, supplying thereby the capital which enables them (2) with their own money and under their own management to take care of their own short-term credit problems at legitimate rates of interest, loans being made only to members of the group and at fair rates, with the resulting earnings reverting to the members of the group as dividends on their savings.

How Is a Credit Union Organized? Let us assume that there is interest in credit union organization at the Black and White Company and that the company employs fifty or more people.

There are successful credit unions in groups varying in number from fifty to many thousand.

There are four steps in the organization process: (1) the development of an attitude of friendly acquiescence on the part of the executives. The credit union must be managed by the employees, but the executives must be sufficiently favorable to credit union organization to adopt a friendly and willing attitude towards it. (2) The development of interest and a willingness to go ahead on the part of a representative (but not necessarily large)

cross-section of the employees, and their petition to the state supervisory department for a permit to operate. Every credit union starts small and develops slowly at first in order to give the directors and committee members opportunity to master the routine before there is much of it. I organized a credit union (with present assets of over \$500,000) five years ago with a dozen members and \$18—a typical beginning. (3) The decision of the state department to grant the charter. (4) If the charter is granted, the organization meeting, adoption of by-laws and the beginning.

Requirement of Members. To become a member of a credit union I must first be a member of the specific group within which it is organized. I must then agree to save at least \$5 (one share) by paying cash for it or at the rate of 25 cents a week. If I can save 50 cents a week I subscribe to two shares, paying in 25 cents a week on each share; if \$1 a week, to four shares, etc. The member who can save the least is welcome, as is the member who can save the most, the theory being that by the time my first share or shares are paid for I will have acquired the habit of saving and that I will go right on thereafter saving automatically and indefinitely. Many Massachusetts credit union members now have in their credit union individual savings to the Massachusetts total maximum—\$4,000.

As a thrift plan the credit union operates for the maximum convenience of the member. Two claims are made for it, both of which are vital tests for any thrift plan and have been substantiated by much practice:—it is claimed that the credit union will induce a larger proportion of those eligible to membership to save than will any other system. Some credit unions have a 100 per cent membership and 70 to 80 per cent is usual and average. Further in a credit union a saver will average greater individual saving.

Problem of Small Loans. We have in the United States a very definite and difficult problem which results from the fact that the average worker and small farmer is without normal credit facilities available for his use in time of credit necessity, a problem which is much aggravated by the further fact that the modern plan of mass production and extended merchandise credit makes for money credit necessity. The Uniform Small Loans Law, now operative in many states, permits the private lender, who operates under regulation, to charge 42 per cent on loans of \$300 and less, the justification for the law being the unhappy fact that the private lender, operating without restriction and regulation, charges a rate so high as to make 42 per cent seem low by comparison. A recent survey by the Twentieth Century Fund indicates that the unlicensed lender—the simon-pure loan shark—still is the largest factor in the small loans business, doing business at rates higher than 42 per cent to a total in excess of \$750,000,000 a year.

The *Credit Union National Extension Bureau* is a non-profit-making organization, financed by Edward A. Filene, and carries on its work as a completely disinterested public service. Its office is located at 5 Park Square, Boston, Massachusetts. Its staff includes field secretaries in all of the thirty-five states with credit union laws. The Bureau will supply complete information on request and assist by personal contact any executives and employee groups within any industrial units, located in the states with such laws, to make use of them.

CHAPTER X

SERVICES FOR EMPLOYEES

SOCIAL, RECREATIONAL, AND ATHLETIC ACTIVITIES

By BERENICE P. TWITCHELL, *Personnel Manager, Pilgrim Laundry, Inc.*

Purpose. Any phase of personnel work, which helps to create a more friendly feeling between management and employees, cannot help but be of value to the organization. This need not mean friendly, as opposed to unfriendly, but that which increases better acquaintance and, through this, better understanding. This, while there are many others, is perhaps the best reason for promoting social activities in industry.

Everyone has had the experience of becoming better acquainted with an employee through some special incident, whether it be feast or famine, fire, or flood. After such an incident, one can never drop back to the old footing—a deeper association has been established. This is what we strive to accomplish with our social program, reaching large numbers rather than a few individuals. The creation of an atmosphere in which employees feel that they are looked upon as human beings, each with his own problems, interests and desires, does not necessarily involve a paternalistic attitude on the part of the management, nor does it have any connection with slack discipline. That such an atmosphere is a business asset to a company, of the highest order, has been demonstrated wherever it has been secured. A girl in a large organization said, "I like my work and am satisfied with my salary but I never feel that anyone cares about me personally or cares whether I am happy or not." It is not my thought that social activities alone will produce the good morale which is dependent upon more basic matters but it is obvious that a social program gives added opportunities and opportunities of a varying kind for cultivating the right atmosphere in a plant.

How Best to Function. There is no set social program which can be generally adopted. Each industry is a different problem, and what would be suitable for one would be all wrong for another. The best procedure is to use a committee whether it be "house" or "factory" or other title. If there is no such committee, to form one would be the first step. Success depends on ability to speak the other person's language, and this committee will be able to keep in touch with the wishes of the larger body. With such a committee in charge of the social program, management need give advice and assistance only when it is requested or obviously acceptable. This puts the responsibility where it belongs, on the group which is concerned. Employees are much less likely to take genuine and sustained interest in something

which they feel is being handed out to them. Moreover this method insures against the very unfortunate situation in which employees feel under compulsion to participate in activities because these have been planned by management.

It should also be left to the employees to work out the details of their activities. They should, however, feel assured of the interest of the management, and this may be shown in a variety of ways. To illustrate, the baseball team may only need transportation to and from the field, or it may need help with buying uniforms; or it may need only the encouragement which will come if certain offices in the athletic association are held by management or from management attendance at the games or a dinner to the team to wind up the season.

Some of the Media. Social, recreational, and athletic activities may be listed as follows:

Social	Recreational	Athletics
Clubs.	Roller skating.	Baseball.
Dances.	Tap dancing classes.	Swimming.
Holiday parties.	Deck tennis.	Basketball.
Salesmen's suppers.	Rowing.	Bowling.
Dinners.	Musical clubs.	
Outings.	Sewing classes.	
Camps.		
Theatre parties.		
Dramatics.		

There are doubtless many other things which could be used to advantage, but this is a list of forms in practical use in many firms. These items could be classified differently but those of the first list lend themselves best to social and friendly contacts. The activities of the second group benefit through teaching something. When an activity is beyond the reach of an individual and he is helped to attain it, he grows mentally through the satisfaction of doing the thing he felt was beyond him. The activities of the third kind benefit the individual physically but what is more important, they carry into the entire organization the spirit and enthusiasm aroused by outside competition.

What Shall We Choose? This is perhaps the most difficult part of a social program. We may see the benefits of all sorts of activities clearly but what shall we choose for our personnel. Some say, Help people to have a good time in their own way. That is good but we want also to help them to find variety and new interests. We can at least use common sense and we would not offer sewing classes to those who sit over a machine all day. Amateur theatricals are usually popular. I have seen this form of activity grow from a brief sketch given in a plant cafeteria to an evening performance before an audience numbering 1,000—and the latter was coached by an employee. In contrast I have seen a swimming class fade out of the picture either badly managed or the wrong activity.

A word more about the value of amateur theatricals. I have seen no other medium that has quite the same value. Some of the benefits are:

1. Some advertising value.
2. A large number can participate
 - a. Acting.
 - b. Ushers.
 - c. Stage management.
 - d. Transportation.
3. Discovery of leadership.
4. Discovery of talent.
5. Pride in organization.

The Christmas holidays are a good occasion for social contacts. It is not necessary to present gifts, but it is possible to promote the getting together of groups for friendly pleasures. Perhaps there is no happier medium than the Christmas party that welcomes those at home as well as those who are employed. It is a valuable contribution when parents or husband or wife also get the feeling of friendship for the company that is necessary for the best conduct of the business.

We can be pretty sure that the activity will succeed that has been requested and then worked out by a committee which finds out the real wishes of all concerned. A theater party at \$2.20 may be arranged arbitrarily and prove a failure and a 50-cent movie party, arranged by a committee, may be a great success. The committee party succeeds because they take the trouble to find out what price entertainment the group wants.

A travel club is another medium that promotes the object of "getting to know the other fellow" and is educational and satisfying. An interesting one in Scotland is conducted in a textile mill with the "shut-down" type of vacation. The club functions throughout the year and on this week of vacation goes to some part of Scotland for sightseeing. The personnel manager makes all arrangements and goes with the group. As this is not her vacation period it is clear that the management feel it is worth while to help these girls to have just the vacation they want most.

Why Several Activities? It is not a cause for immediate discouragement when only a few people take interest in an activity. The situation should be analyzed and evidence found as to whether the interest of the few is not strong enough to make it worth while. If only a small group profits that does not always mean it is the wrong activity. We may find it is the only thing that that particular type is drawn to. It is possible that the "single-activity" person does more for the organization in his comments both inside and out, than does the one of wider interests. We never know just what will be met with enthusiasm. Enough activities will serve a varied group and it is to our advantage to appeal to all types.

WHAT SHOULD BE PRINTED IN EMPLOYEE MAGAZINES?

By **STERLING PATTERSON**, *Editorial Director, Western Electric Company, Inc.*

A personnel periodical is any publication appearing at regular intervals, which is designed to be circulated among and interest mainly, the workers

in any given company. These publications may take various forms. They may be monthly magazines, weekly magazines, weekly newspapers, daily newspapers, semimonthly newspapers, mimeographed sheets, or even blotters. They may go to office workers, factory workers, or the sales force. As long as they have publication dates, the date when the employees may look for them to appear, we may consider them periodicals.

A summary of the basic purposes of such a periodical was made by the Western Electric News as follows:

1. A natural medium for the expression of our common interests and a complement to human contact with our fellow employees.
2. A means of telling us where the parts fit into the whole, and what becomes of the products we make.
3. A human interest undertaking because we readers are human beings with the usual human reactions.
4. A medium which must appeal to us chiefly through our three main interests—our jobs, our homes, our hobbies.

Labor Policy Important. A personnel magazine is essentially a part of a personnel program. It is one of the undertakings which a company may carry on in an effort to bring about mutual understanding and trust between management, workers and stockholders. Perhaps it is better to say between workers and investors, for those who are generally referred to as management are, with most of us, employees and certainly are workers.

If the relations between management, men, and investors are not friendly and the company publishing the periodical is honest, the magazine may help to bring about a friendly condition when employees are treated fairly and given the facts. Men as a whole draw the right conclusions. But this does not imply that an employees' magazine is a panacea for labor ills. It is only one means at the disposal of management which may be employed in working toward the goal of harmony.

One of the functions of a personnel magazine is to explain the interlocking interests of management, worker, and stockholder. When in addition to this explanation, arrangements are made so that the workers may easily become capitalists as well (through employee ownership of stock), fully half of the misunderstanding is done away with.

The Company's Motive. In the case of many personnel publications there would seem to be a lack of a definite policy. Indeed, at times we feel that some magazines are published perhaps because other companies have found them successful. Some papers look as if the job of editing were a part-time job of someone in the employee relations or advertising departments, often a person not equipped to be an editor; and consequently the publishing of the magazine may be a waste of money.

The Complexion of the Audience. The intelligence of the employee magazine audience is almost invariably underestimated. Personnel publications are likely to "write down" to their audiences. This unquestionably is a mistake. From the literary standpoint a personnel publication is like a newspaper. As one well-known New York newspaper editor phrased it,

"A newspaper is edited for the approximate mutt." So is a personnel periodical, but this does not mean that said mutt has not a native intelligence which will operate in perfectly normal fashion provided the vocabulary of the magazine is his vocabulary. If the audience includes a large number of people who do not speak English it is still quite likely that they will know everything that appears in the magazine; first, through pictures, and secondly, through their children who are going to school and can read the magazine when it is taken home. If the periodical does not have a family circulation a great opportunity is being missed.

The Editor and His Status. It is difficult to find the right kind of man, or woman, to edit a personnel publication. He should be an educated, broad-minded man with an interest in humanity. He should be trustworthy. He should have a pleasing personality. He should be a good journalist, should know the mechanics of his work, and should have artistic ability. He should be distinctly a part of the company, but at the same time he should be able to take an impersonal view of management, workers and stockholders and to make fair decisions with regard to them. He should be able to earn as much money in editing a personnel publication as he could earn in editing a magazine of general interest.

Perhaps more important than the man himself is his status. One editor who is doing an outstandingly good job, reports to the president of his company, has complete freedom as to what goes into the magazine and what stays out, is responsible for the magazine only to the president but sits in on all meetings of the department in charge of employee relations. The editor should report sufficiently high up the line to get a broad view of his company and the industry. He must be very close to the people who are handling relations with employees, but it is probably better for him not to be actively engaged in the administration of that work. It seems to be very difficult for active personnel executives, through their very sincerity, to write anything without preaching.

Lastly, the editor must be a good salesman. The things he has for sale are his own expert ideas. In many companies the editor has associated with him as a so-called "advisory board," a group of executives representing the various interests of his company. He must convince these men that they play an important part in making the magazine, but he must keep them in the position of advisors and not allow them to take the editorship out of his hands. That calls for some diplomacy, naturally. If he can do it, he changes his advisory committee from a nuisance into an asset. If the editor is well trained in his profession his job is not so difficult, although it takes time. After all, the editor is the expert dealing with amateurs.

What Does the Audience Really Want? What do the readers want? This can be summed up in a sentence. They want to be interested and there is no reason why they cannot be. The likes and dislikes of the audience of a personnel magazine are as varied as the likes and dislikes of readers of a newspaper, but they are all bound together by a common interest in the company through their positions in it. They want to know everything interesting which the company is doing. They want to know about their friends in the company who have moved to other towns. They want to know about

interesting things which individuals are doing in the company. They want to know when people are promoted as it strengthens their hope that they themselves may be promoted some time. They want variety—a balanced ration.

There are three main interests around which stories should be built—the jobs, the homes, and the pleasures. How interesting the stories are that are thus built up depends upon the skill of the editor.

How May the Success of Employee Magazines Be Judged? The best test, it seems to us, of whether the periodical is read is the reaction caused by lateness of the magazine. If there are inquiries when the magazine is late, if there are howls when an insufficient number of copies are received, then rest assured that the people are reading the magazine and want it. Another test is to see if any copies are left around the shop after distribution. If the magazine is not folded up and put into the pocket to be taken home, it is not successful. The best test of all is, perhaps, the spot check when properly conducted.

Common Faults of Personnel Publications. There are two faults which are widespread among employee magazines. First, they are often hybrid publications. Second, they are frequently dull. Many companies with a single magazine feel impelled to have that magazine perform both the functions of a magazine and a newspaper. This cannot successfully be done. It is our private opinion that a newspaper is the best single publication. The most important element in news is that of time. A magazine article on the other hand does not go stale for some weeks, perhaps months. Allow us to give an example of the difference in point of view between magazine and news writing.

Suppose a bowling contest were held at the works. The newspaper story would be "Bowling Contest Won by Team A" and would start off something after this fashion: "Last night in the Flatfoot Bowling Alleys, Team A, representing the Joiners and Wipers, nosed out Team B of the Darning and Patching Department. Thousands of members of the J. K. Gudgeon Ball Bearing Company witnessed the close of this annual event," and so on. The magazine story would be "Fine Points in the Art of Bowling—John A. Crosshatch, Captain of Joiners and Wipers team, Winner of Annual Bowling Contest, gives Tips to the Tyros." These two points of view are naturally incompatible.

In a number of companies now the monthly magazines are becoming real magazines and they are being supplemented by newspapers. The magazine of the Commonwealth Steel Company, for example, has two issues: a home edition which would appear to be a sort of monthly newspaper containing material of interest only to the people in the works, and an addition for outside circulation containing material written from the magazine point of view. This, too, is circulated throughout the works, and both magazines are well received.

The Illinois Bell Telephone Company has a monthly magazine and a weekly supplement which is in effect a weekly newspaper, printing all sorts of personals and covering all events in a timely, "newsy" fashion.

The Western Electric Company has a monthly magazine in its twentieth year in 1931 which is supplemented by six semimonthly departmental newspapers, professionally edited. All of these newspapers fit into the magazine and help to better it. They perform a function which no magazine with a circulation of eighty odd thousand could hope to perform.

Lack of Consideration for the Audience. We come now to the second point—that many personnel publications are dull. We find hackneyed thoughts on success written by officers. We find stories of an officer's trip to Egypt which might have been clipped from Baedeker. We find uninteresting talks given at conferences reprinted in full. We find a lack of balance, of variety—a too frequent mention of officers—a lack of originality in make-up and in writing.

Many of these things are doubtless due to short-sightedness of management. However, management is not entirely responsible for the poor stuff which appears in employee publications. Of course, the contributors are amateurs and it, therefore, devolves upon the editor to train as many writers in his company as he can. This is hard work and perfectly thankless, yet an editor worthy of the name will make an effort in that direction merely in order that he may produce interesting material for his magazine. He should set a high standard, for the sort of material he prints is the sort he is going to receive.

In the Western Electric News there was printed rather against the judgment of some executives who could not see any company bearing in the story, an article on "Raising and Hybridizing Delphiniums." The delphinium, incidentally, is a flower—the hardy larkspur. We explain this because the last time we told this story someone thought that delphinium was a kind of metal like aluminum. This piece was written by a shop man who happened to have achieved quite a success as an amateur grower of this flower. As a result of the publication of the article, we received some 2,000 letters from all over the country asking for further details about the growing of the flower and begging for seeds of the particular strain which this amateur had developed, so that a similar attempt to create beauty might be made.

Universal Interest in Hobbies. There is a vast field to draw upon in hobby stories and you will be surprised at the number of people who are interested in the same hobby. A hobby is an escape from the reality of life. So is your magazine, in a way, an escape from the essential tedium of work.

Appropriation. There remains one more question. That is, how much ought a company to spend on employee magazines? What should be the amount of this investment in goodwill? It seems to us that the proper approach for the solution of this question is how much is it worthwhile for each company to spend each year, per employee in an effort of this kind? Is \$2 per year per employee right, or is \$5 per year per employee too little? Naturally this is a question for the individual company to decide. Once decided they should turn over the spending of the money to the editor, give him encouragement, cooperation, and a free hand.

If each editor had these, we doubt not that in a short time we could produce magazines which would compare favorably in interest and influence with the best sort of commercial magazines of the country.

INDUSTRIAL TOWN-SITE DEVELOPMENT AND ADMINISTRATION

BY THOMAS A. McDONALD, *Industrial Counsel*

Necessity for Town-site Developments. There has been much said and written concerning the problems of organization, particularly that phase relating to selection, placement, adjustment, and development of employees. But little that is definite and concrete has been presented on the subject of *accommodation* of personnel, which gives rise to the necessity for industrial housing and town-site development.

Companies Concerned. This question of industrial housing is a perplexing and important one to companies located in settled communities where there is an actual housing shortage, or where rents for satisfactory dwellings are beyond the means of employees. It is a *vital* problem to companies starting new enterprises in out of the way places, where practically no living accommodation of any kind is available. Because of the greater number of difficulties involved, we will consider the question here principally as it affects firms in the second classification. Companies in the first class will have many, although not all of these same problems, so that much of what follows will be applicable to them as well, and can be adapted to suit their particular needs.

Importance of Satisfactory Living Conditions. In answer to a questionnaire sent to various employers in twenty-five cities of sixteen states, the majority claimed that unsatisfactory living conditions adversely affected production. Henry Ford states in a recent article: "It has been the experience in our European shops that, given the same relative wages and conditions, the European workman is not at all inferior to the American"; thus implying that any existing inferiority has been due to wages and conditions rather than to the people themselves.

If this is the case in settled localities, it is very much more so in isolated communities, as many companies have learned to their cost. Granting that it is necessary and desirable to provide fair wages and working conditions in a plant in order to secure and retain intelligent, loyal, efficient workers, it is every bit as important to provide as satisfactory living conditions as possible, while keeping expenditures within reason. Since the ultimate purpose of developing an industrial townsite is to properly provide for the protection, the comfort, the health, the education, and the recreation of the people who dwell there, it is obvious that as serious thought and study should be given to this phase of the enterprise as to the organization and development of any part of the plant itself. Making men substantial, self-respecting workmen and citizens goes far toward making them cooperating factors in the success of any business.

Importance of Initial Plans. Unfortunately, very few towns are the result of sufficient planning at the start, because their founders rarely saw far enough into the future and so made no plan or provision for what might be required in five, ten, or fifty years. Where towns have been carefully planned and soundly managed, the results speak for themselves.

In considering the question as a whole, it would be well to point out, first of all, the advantages of a sound development as against the one probable dis-

advantage, namely, the cost, as compared to the actual direct money return on the expenditure, bearing in mind at all times that there are usually compensating factors, such as low costs for fuel and power, and decreased taxation.

Advantages of Sound Development. Some of the advantages under normal conditions are:

1. Contentment which results from wholesome living conditions goes far toward creating an attitude of mind that is conducive to individual as well as plant efficiency and morale.

2. Labor turnover is unquestionably reduced. Losing men with valuable training and having to train new ones is very expensive.

3. The skill, experience, and loyalty which accompany long, steady service undoubtedly tend to reduce costs.

4. A better selection of labor is possible.

5. Permanent labor tends to keep the wage scale within reason.

6. Poor living conditions, combined with insufficient means of physical, spiritual, and mental welfare have their effect on the worker's family. Discontent and irritability in his family react upon the employee, making him dissatisfied and resentful. Many troubles in the plant are directly traceable to unsatisfactory home conditions.

It is often said that the kind of people in a town governs the kind of town it is. It is just as true to say that the kind of town you have very largely determines the kind of people you will attract.

Standard Requirements. To provide conditions that will attract and hold intelligent, efficient, and loyal workers, the necessary requirements are more or less standard. Adequate provision must be made for:

1. Comfortable homes, hotel, and boarding houses, at rates employees can afford.

2. Healthful and sanitary surroundings.

3. Pure water and milk supply.

4. Good medical service and hospital accommodation.

5. Modern schools and playgrounds for children.

6. Police and fire protection.

7. Stores furnishing suitable merchandise at reasonable prices.

8. Churches.

9. Recreational facilities.

Before construction plans are settled, it is necessary to decide what the immediate requirements are, and to give consideration to the probable and possible future requirements.

Forecasting the Pay Roll. The first step should be a detailed forecast of the pay roll, showing the number of employees that must be provided for, the rates to be paid, and the number of employees at each rate. These may be loosely classified as staff, skilled, semiskilled, unskilled, and further subdivided if necessary. Then a careful estimate must be made as to the number of married and unmarried in each class. There should also be estimated the total number of children, divided into under school age, school age, and working age. In making up estimates, workers in the auxiliary units, such as school, stores, post office, bank, and medical service, must be included. This gives the foundation upon which to build the housing requirements.

Table I shows the detailed forecast of a pay roll used on an actual development, being based upon a study of several plants similarly situated.

TABLE I

Daily rate	Monthly rate	Staff		Skilled		Semi-skilled		Unskilled		Total		Grand total	Probable number of houses required
		Married	Single	Married	Single	Married	Single	Married	Single	Married	Single		
\$ 3.00	\$ 78.00	..	7	..	..	..	..	51	35	51	42	93	51
3.50	91.00	..	7	..	..	..	..	72	44	72	51	123	72
4.00	104.00	2	3	..	..	42	30	..	..	44	33	77	44
4.50	117.00	3	3	..	..	..	9	6	..	12	9	21	12
5.00	130.00	2	4	..	..	20	16	..	..	22	20	42	22
5.50	143.00	5	6	10	6	..	..	..	..	15	12	27	15
6.00	156.00	1	1	16	5	..	..	..	..	17	6	23	17
6.50	169.00	1	1	11	5	..	..	..	..	12	6	18	12
7.00	182.00	2	1	11	5	..	..	..	..	13	6	19	13
7.50	195.00	2	..	8	3	..	..	..	..	10	3	13	10
8.00	208.00	2	1	1	..	..	..	..	..	3	1	4	3
8.50	221.00	1	..	..	..	..	..	..	..	1	..	1	1
9.00	234.00	2	1	..	..	..	..	..	..	2	1	3	2
9.50	247.00	2	..	..	..	..	..	..	..	2	..	2	2
10.00	260.00	2	1	9	3	..	..	..	..	11	4	15	11
	273.00	1	..	5	1	..	..	..	..	6	1	7	6
	286.00	1	..	4	2	..	..	..	..	5	2	7	5
	300.00 and over	9	2	3	1	..	..	..	..	12	3	15	12
Total	.....	38	38	78	31	71	52	123	79	310	200	510	310

Determining Number and Types of Houses and Other Accommodations. This table gives daily and monthly rates¹ for the various classes of workers; also a careful estimate of the number of married and single men under each rate and class, the totals, and the number of houses required. To these must be added the teachers, doctors, dentist, policemen, town-site employees, store, bank, post office, bakery, dairy, laundry, and any other miscellaneous workers not actually employed in the plant.

The number of children is more difficult to figure as it varies considerably, but is apt to average not less than one child of school age to each house, and one child of non-school age. The number of children of working age in a new community is not likely to average over 20 per cent of the number of families housed.

Schools, hotel, boarding-house, and hospital accommodation must be balanced against the percentage of houses actually built as compared to the estimated requirements. If many six and seven room houses are built, it is

¹ The average daily rate for these calculations works out at a trifle less than \$5 per day or \$130 per month.

safe to figure that at least one-third of the houses will have a single worker living there; that is, a son or daughter of working age or a roomer.

The next step is to determine the minimum reasonable standards for the types of houses as to size, number of rooms, style of architecture, materials to be used, kind of construction, number of each type, and total number to be built, with approximate costs. On this depends the accommodation that must be provided in the way of schools, hotel, boarding houses, hospital, and other facilities. The more houses provided, the greater the school and hospital requirements, and the less hotel and boarding-house accommodation will be needed for the same number of employees.

To take care of the unmarried men not accommodated in private homes or in the hotel, small boarding houses have proved in actual experience to be most satisfactory. These are cheaper to run than additional hotels, and the men much prefer the small boarding house, since this enables the individual workers to choose the class of accommodation they desire.

Careful study is required to secure a balanced program and, before final decision is made, the first cost of various plans and the amount of money available should be considered, as well as the cost of operation.

Permissible Rental. One of the most important factors to consider in determining the minimum requirements is the relation of the amount of money the employee can afford to pay as rent to the amount of the investment. (The same problem will present itself if houses are to be sold to employees

TABLE II

Daily rate	Monthly rate	Maximum fair monthly rental 20 per cent of wages	Annual rental
\$ 3.00	\$ 78.00	\$15.60	\$187.20
3.50	91.00	18.20	218.40
4.00	104.00	20.80	249.60
4.50	117.00	23.40	280.80
5.00	130.00	26.00	312.00
5.50	143.00	28.60	343.20
6.00	156.00	31.20	374.40
6.50	169.00	33.80	405.60
7.00	182.00	36.40	436.80
7.50	195.00	39.00	468.00
8.00	208.00	41.60	499.20
8.50	221.00	44.20	530.40
9.00	234.00	46.80	561.60
9.50	247.00	49.40	592.80
10.00	260.00	52.00	624.00
	273.00	54.60	655.20
	286.00	57.20	686.40
	300.00 and over	60.00 and over	720.00

later.) Regardless of actual cost of the house, the rental or sale price will have to be within the means of the worker, with the difference in cost—if any—being borne directly by the company. Otherwise, wages will have to be increased to meet the higher rents. The general practice is to pay the going wage and charge to operation any deficit due to difference between what employees can afford to pay and actual cost.

Various authorities state that workers can afford to pay from 15 to 25 per cent of total income for rent—the latter figure being used when heat is supplied. Where tenants supply their own fuel, 20 per cent should be the maximum for the average, and might well be less for the worker earning under \$100 a month, particularly if he has one or more children, unless more than one member of the family is working.

Table II supplements Table I and shows the daily rate, monthly rate, and what the permissible maximum rental would be, figuring 20 per cent of monthly income for rent.

Cost of Houses. A most important factor to be considered in determining minimum standards is the relation of the sum of money the employee can afford to pay as rent to the amount of the investment on the part of the employer.

Table III shows monthly earnings, permissible monthly and annual rental, based on such earnings, and the amount of money which can be spent on houses if the gross return is to be 12, 10, 8, or 6 per cent. It also gives the number of houses in each class.

TABLE III

Monthly earnings	Permissible monthly rental	Annual rental	Number of houses	Cost of houses based on gross return of			
				12 per cent	10 per cent	8 per cent	6 per cent
\$ 78.00	\$15.60	\$187.20	51	\$1,560.00	\$1,872.00	\$2,340.00	\$ 3,120.00
91.00	18.20	218.40	72	1,820.00	2,184.00	2,730.00	3,640.00
104.00	20.80	249.60	44	2,080.00	2,496.00	3,120.00	4,160.00
117.00	23.40	280.80	12	2,340.00	2,808.00	3,510.00	4,680.00
130.00	26.00	312.00	22	2,600.00	3,120.00	3,900.00	5,200.00
143.00	28.60	343.20	15	2,860.00	3,432.00	4,290.00	5,720.00
156.00	31.20	374.40	17	3,120.00	3,740.00	4,680.00	6,240.00
169.00	33.80	405.60	12	3,380.00	4,056.00	5,070.00	6,760.00
182.00	36.40	436.80	13	3,640.00	4,368.00	5,460.00	7,280.00
195.00	39.00	468.00	10	3,900.00	4,680.00	5,850.00	7,800.00
208.00	41.60	499.20	3	4,160.00	4,992.00	6,240.00	8,320.00
221.00	44.20	530.40	1	4,420.00	5,304.00	6,630.00	8,840.00
234.00	46.80	561.60	2	4,680.00	5,616.00	7,020.00	9,260.00
247.00	49.40	592.80	2	4,940.00	5,728.00	7,410.00	9,880.00
260.00	52.00	624.00	11	5,200.00	6,240.00	7,800.00	10,400.00
273.00	54.60	655.20	6	5,460.00	6,552.00	8,190.00	10,960.00
286.00	57.20	686.40	5	5,720.00	6,864.00	8,580.00	11,440.00
300.00 and over	60.00 and over	720.00	12	6,000.00	7,200.00	9,000.00	12,000.00

The Town Site as an Investment. As an investment, one would expect the rental to cover interest on capital 6 per cent, depreciation 3 per cent, insurance $\frac{1}{2}$ per cent, maintenance 2 per cent, or $11\frac{1}{2}$ per cent; plus taxes ranging from 1 per cent to as high as 5 per cent, depending upon the amount of taxes the plant pays to the town. Estimating taxes on houses at $2\frac{1}{2}$ per cent gives a total figure of 14 per cent.

Very few companies will admit that they lose money on their housing, but an analysis of actual figures from several companies shows that the one getting a gross return of 10 per cent or better is a rare exception, and some get less than 6 per cent gross. If a company gets a gross return of 8 per cent this would, on the average, cover depreciation 3 per cent, maintenance 2 per cent, taxes and insurance 3 per cent; or if nothing were figured for depreciation, there would be 3 per cent for interest. If the cost of the lower rental houses resulted in a return of less than 8 per cent, this difference might be made up on rentals of the higher grades.

Types of Houses. Types of houses may be classed as follows, in order of preference: single houses, semidetached, duplex, row houses, and apartment houses. There is always an insistent demand for the single house, but it is the most expensive to build. The row house, that is, several houses with a party wall between each two houses, and two rooms deep upstairs and down, is a cheaper house to build, but obviously has many disadvantages and should be avoided if possible. The single house and the semidetached two-family houses, both of one and two stories, seem to give best satisfaction.

As to number of rooms, a distribution of 20 per cent four-room, 30 per cent five-room, 30 per cent six-room, 15 per cent seven-room, and 5 per cent for special houses should suffice, unless there are some unusual conditions. As it is not customary for more than 65 per cent of total requirements to be constructed the first year, any lack of balance can be corrected later.

For the unskilled and some of the other lower paid workers, the floor plan should be laid out to provide a good-sized kitchen and a good-sized living room, which can also be used as a dining room; sufficient closet space; a large bedroom for parents and infant children, a bedroom for the boys, and one for the girls. A bath room and toilet should be provided; also arrangements for heating with stove and for running water. These houses can be built without cellars, but on a solid foundation. An enclosed porch on the rear can be used for coal, wood, and other storage. The omission of parlor, cellar, and front porches will cut down the cost considerably. Heating these houses with stoves will make the fuel bill much lower for the tenant.

For the skilled workers and staff, additional facilities such as separate dining room and living room, cellars, larger closets, wash basin in bath room, furnaces (or hot-water heating), laundry tubs, and porches can be provided.

Construction and Design. The kind of material used and the method of construction will depend to a large extent upon the locality. There is little saving in total overall cost by using poor material or poor construction methods, for what is saved on original cost is more than lost on maintenance, over a period of years. Details of construction cannot be gone into here, except to say that houses should be comfortable, have well insulated walls, and sealed floors and roofs.

In considering exterior design, it is well to realize that there can be beauty as well as economy in simplicity. Houses need not be elaborately festooned, with valled, dormered, or angled roofs and scroll work. Good variety can still be secured without departing from the square or oblong type houses, with well-proportioned openings, a proper blending of colors, and well spotted with regard to the topography and the surrounding houses. Some of the most attractive towns, on close scrutiny, prove to be a collection of simply designed houses plus well-planted shrubbery and shade trees.

Physical Layout. There seems to be an impression that the first step to take in laying out a town site is to clear off all trees and shrubbery. This is a great mistake. Why destroy one of the most valuable natural assets, and then wait years for new plantings to develop? Clear off only what is necessary and utilize the balance.

Planning the physical layout of the town must be done very carefully, as mistakes made at the start are difficult if not impossible to correct later. Experience in many instances has proven the advantage of securing in the beginning the services of an experienced and competent town planning and landscape engineer with a history of success. If he is also an architect, so much the better. In any event, the engineer and architect must cooperate fully if the final plan is to be all that can be desired.

The plan must provide for roads, lanes, walks, sewers, water lines, location of dwellings and other necessary buildings, as well as for parks and playgrounds.

The land needed for all possible future requirements should be secured, along with control of all land within reasonable distance. Most companies fail to do this and have to pay ridiculous prices later for land that could have been secured for a few dollars an acre. In addition, satellite communities must be avoided; that is, shack and shanty developments on the borders of the town, unsanitary and offensive in appearance and a menace to the health of the community. These usually spring up when there is a shortage of accommodation, when rentals are beyond means of workers, or where practically no provision is made for some class of workers. However, this can be controlled (even though housing provision is not made for all workers) and can be made one means of substantially reducing the capital expenditure. The method of doing this, however, so much depends upon local conditions, upon the class of workers, upon the financial status of the company, and upon the policies of administration to be adopted, that no definite method should be proposed without considering in detail all or most of these factors, since the company's total expenditure is so greatly affected by the policy adopted here.

Zoning Areas. In order to concentrate residences, business, and industries, each should be confined to certain definite areas. Where practicable, the plant is usually at one side of and a reasonable distance away from the town. The business section is usually near the center and serves as a dividing line between different residential sections. It provides for stores, offices, bank, post office, and public buildings. There may be two, three, or more residential sections, each one providing for a different class of houses.

When practicable, the plan should be so arranged that the extension of sewers, water lines, roads, and walks can be economically expanded as required.

Problems of Administration. As soon as the organization is ready to operate, it is confronted with the various problems of administration. These, of course, will depend largely upon the type and size of the organization and the conditions in the particular locality. There are certain questions, however, which are bound to arise and which must be anticipated. For example: How can one arrive at a fair basis of rental? What are rents to be based upon? How can one allot houses so as to give general satisfaction? Who shall allot houses? (A very vital function.) What is the best method of keeping down cost of maintenance and still not have dissatisfaction? How can one avoid discontent on part of tenants who want transfers which are not justified because of increased expense? How can one do special work that seems justified in some cases, without inviting an avalanche of requests from tenants similarly situated? How can one induce tenants to keep up appearance of grounds? How can one increase rentals that are too low, and still keep tenants satisfied? Is it advisable to let employees have a voice in the municipal government? What are the dangers and the advantages in connection with this? Regarding stores: Which is best: to allow outside merchants to open stores or to run a company store? If the latter, on what basis should it be operated?

Space will not permit detailed discussion of these points, but it is important to emphasize the fact that policies for carrying on the administration of town-site affairs must be formulated in such a way as to give satisfaction to all concerned, at not too great expense to the company. Definite standard policies are very essential because of the necessity for consistency. It is imperative to bear in mind that everything done in the beginning establishes precedents, which may prove to be vital factors in the ultimate success or failure of the enterprise.

Closed Town or Open Town. It may be desirable to touch very briefly upon the question of a closed or open town, since this also is one which needs to be considered in the early stages of a town-site development.

Until all plans have been settled and a definite program decided upon, there is a distinct advantage in having complete control of the town. However, there are many disadvantages to retaining permanent control. In most cases the government will give little or no financial assistance to a town entirely owned by a company; whereas in an open town it is frequently possible to secure substantial contributions toward schools, hospitals, and other public buildings, as well as roads. In addition to this, an open town can often issue bonds at a low rate of interest, guaranteed by the government, for payment of sewers, water works, roads, and other municipal improvements.

Furthermore, if it is the desire of the company to encourage employees to build or purchase their own homes as the town develops, in order to limit its own expenditures, an open town is desirable. Very few people want to own property in a closed town.

The double role of sole landlord and employer is a difficult one to fill. Full company control of not only the homes but also of the administration of

the government, the stores, and the public service means that all the people are tenants or boarders. Most of the initiative, interest, and feeling of responsibility that flourish in a community of home owners are absent, and building up civic pride is a big problem. However, companies have occasionally succeeded in doing it, while many others have failed completely.

Carrying Out the Plan. The development of a town site is by no means a slight undertaking. No town can afford to do everything at once, but every town should try to accomplish at least one big thing each year. A definite program should be mapped out, and an attempt should be made to follow it, always looking to the future. The accomplishment of one company, in an entirely unsettled community, over a period of twelve years will illustrate this point.

During the first three years a start was made with a definite plan for the town; then came some houses, water, sewers, and fire protection; next, good schools, good roads, an athletic field, and tennis courts. The fourth year saw a new hotel; the year following, fifty more houses; next, a fine skating rink; during the next three years, seventy-five more houses. In the tenth year they completed one of the finest hospitals in the country and a curling rink. And with the following year came the opening of a nine-hole golf course, more houses, and a magnificent hall. In almost every year some work was done toward improving the appearance of the town by planting trees, flowers, and shrubs, as well as adding to the parks and boulevards.

Sharing Responsibilities. A program which provides for growth from year to year helps to quicken the interest of all concerned and to sustain the enthusiasm which comes through the joy of gradual unfoldment. It also affords opportunity to secure the cooperation of the townsfolk in connection with various community activities, which is exceedingly desirable because men, women, and children will all have greater satisfaction and pride in the town if they feel they have really had a hand in its making.

A definite plan to delegate to committees of the workers certain phases of the work having to do with civic, educational, and recreational affairs creates a bond between management and employees which fosters a deeper spirit of cooperation throughout the organization. It is worthwhile, therefore, to make the formation of such committees a definite part of the plan for carrying out the advanced stages of a town-site development program, bearing in mind the fact that men value most the things they strive for.

CHAPTER XI

COLLECTIVE BARGAINING WITH UNIONS

By F. A. SILCOX, *Director of Industrial Relations, New York Employing Printers Association*

Determination of Policy. The first problem management faces in any relation with trade unions is one of the determination of the general policy. There are three possible courses to take: (1) to accept the trade union as a part of the industrial structure and work out a constructively comprehensive plan of cooperation; or (2) to accept the trade unions under compulsion and make the most of the situation; or (3) to resist and operate on a non-union basis. Factors inherent in the locality or in the industry will in most cases be the basis for this policy decision. Among the most important of these factors are:

1. The number of plants in the locality operating on a union basis.
2. The percentage of production volume represented by the unionized plants.
3. The number of craft unions in the industry.
4. The necessity for joint discipline—control to effect industrial stabilization.
5. The strength of the unions through their controls of skill.
6. The available supply of labor and the time necessary to train skilled workers.
7. The character of union leadership, its history and record for dependability.
8. The degree of jurisdictional authority exercised by existing unions in the industry and the possibilities of conflict.
9. The control of the local unions through their international organizations.
10. The competitive rates of wages in plants not union and those paid by plants in the same locality or in a competitive field.

Upon the basis of these primary factors, management must decide the advantages and disadvantages of operating on a union or a non-union basis.

Unionism, Effect on Output. Limitation of output is not inherent in either union or non-union operation. Limitation of output in its various forms is usually a protective device based upon fear of unemployment. With this fear removed, it is possible to release the capacity of the working forces. Under union conditions the protective measures set up are more effective in operation, to the extent and degree of strength of the particular union or unions in the case and the existing conditions of the labor market. In a short labor market the strength of the union is increased through the possible

choice of outside jobs open to the employees, and it is the problem of the management of the particular plant to insure itself through satisfactory relations and working conditions. In a long labor market the fear of unemployment may make for temporarily increased production because of the lack of the alternative of other jobs. The only effective method to secure maximum production with trade union labor is to build up a relationship based on mutuality of interests and confidence between men and management.

Unionism and Employee Representation. Unionism is founded upon the belief of employees that in order to secure certain wages and working conditions they must place themselves in an economic position sufficiently strong to secure such conditions through the complete withdrawal of their work if necessary. In the withdrawal of their labor, financial support is obtained by previous pooling of defense funds in a nation-wide organization. In addition to this protection, many unions offer death benefits, out of work relief, protection against unjust discharges, and the like. Employee representation in a plant, which is an integral part of an industry, must offer, to be effective in the long run, an equal or more attractive alternative to employees than that which the trade union offers. Plans for securing representation for employees are in essence of two kinds: (1) an employee organization with no union contracts or operating entirely independently of any contracts that exist, or (2) the use of the joint conference principle together with union recognition. The character and structure of any employee representation plan will in itself determine whether it is reconcilable with trade unionism. Where the union is recognized as a part of the industrial structure there appears to be no sound reason why a plan of plant employee representation need be irreconcilable with unionism. In one case, that of the agreement of the Baltimore and Ohio Railroad with the shop craft unions, a plan of union and plant employee representation has been tried and has been found to be successful in promoting effective working relations resulting in increase of efficiency, the elimination of waste and the minimizing of misunderstanding. The Baltimore and Ohio plan is definitely suggestive as a constructive effort to secure the advantages of an employee representation plan worked out in cooperation with the unions.

Unionism, Effect on Wages and Working Conditions. If the unions are of long standing and well entrenched through the control of skill, the undoubted effect is to establish standards of wages and working conditions. There is no absolute in wages and working conditions by which union wages and working conditions may be measured or determined on any preconceived basis. The practical effect of unionism is to secure both wages and working conditions to the limit of its economic strength. Usually, in a locality where the unions are strong the result is to establish through collective agreements standards which serve as the basis for wages, hours and working conditions in the community in which they operate. Plants operating non-union are, to a more or less degree, affected, depending on the extent of union control. If the union control is strong the natural effect is to use that strength to the limit to raise the rates of wages, shorten hours, and improve working conditions from the employee's standpoint. Union demands may for short

periods force wages and working conditions beyond what an individual plant or an industry can economically stand. Usually the balance is restored if jobs are lost and the demands secured prove in the long run to be detrimental to the union and its members. It is axiomatic that in the long run a group will not act contrary to its own interests.

Collective Bargaining as an Application of Industrial Law, Effect on Discipline and Authority. To secure uniformity of wages, hours, and working conditions through the major portion of any highly competitive unionized industry, particularly one made up of a large number of small units, experience has shown that joint disciplinary action is required on the part of a strong employers' association and strong unions. Gradually, between the two forces, a code of industrial law is built up, through joint interpretation of issues in current cases, and law is enforced through joint disciplinary action. The plant is guaranteed against any interruption of work when it conforms to the laws laid down by the joint committees representing the employers and the unions or, on the other hand, if the plant fails to conform, the unions are released from their contract obligation and may use the strike, if necessary, to enforce the decision. In industries in which collective bargaining has been operative over any extended period of time extremes seldom have to be used to enforce discipline, both employers and the unions accepting the joint decisions, their experience dictating that it is to their own best interests in the long run to maintain order in the industry of which they are a part.

Definition of "Closed Shop" and "Open Shop." By closed shop is meant a shop employing only union workers. No work coming within the jurisdiction of the unions represented is allowed to be performed by anyone not a member of the unions. It is based on the practical assumption of the unions that in order to maintain the standards set up under collective contracts they must control the working personnel.

The open shop is one which is open to both union and non-union workers. The open shop is based upon the employers' assumption that he has the right of freedom of individual contract with labor whether union or non-union.

Stabilization of Costs by Union Contract. A large item, in some industries the largest single item, in cost of production is labor. In highly competitive industries it is of vital importance to predetermine, fix and maintain with uniformity between plants the wages, hours, shop practices, and working conditions which affect labor costs. This is accomplished in unionized industries through joint collective contracts which set forth the standards and provide the machinery of enforcement.

Nature of the Unions, Union Functions. There are, generally speaking, three types of unions:

- a. Craft unions.
- b. Industrial unions.
- c. Labor unions.

a. *The craft union* is an organization of wage earners engaged in a single occupation or task. It may include at times a number of closely allied tasks or crafts. Such a union usually covers but a fraction of the work of a given indus-

try. The craft unions in different localities are usually united into a national or international organization which serves to integrate all of the various local units into one general body. Examples are the International Typographical Union, the Brotherhood of Locomotive Engineers, and the like. These craft unions are further federated in city federations, state federations, and national or international federations. Examples are the Chicago Federation of Labor, the Illinois Federation of Labor, and the American Federation of Labor. In each of these federations, the constituent organizations retain their individual independence or sovereignty.

b. The industrial union is a type of organization designed to include all workers in an industry rather than those simply in individual crafts or trades. Its usual units are the local, the district, and the national or international industrial union.

c. The labor union is a type of organization designed to include all workers regardless of craft or industrial divisions into homogeneous groups, by localities, by districts, and throughout the nations or the largest possible international area.

The functions of all of these types are generally, through economic solidarity:

1. To secure improved wage conditions.
2. To secure shorter working hours.
3. To insure security of employment.
4. To protect members against arbitrary, autocratic action by management.
5. To give relief to members in case of loss of employment, injury, sickness, and old age.
6. To secure the enforcement of agreements.
7. To provide machinery for the settlement of disputes.
8. To exercise some control on the introduction of labor displacing machinery.
9. To limit the number of apprentices.
10. To force by strike when necessary, financed by defense funds, recognition of the union and its demands.
11. To give voice through representative organizations to political expression.
12. To promote a wider opportunity for members to participate in the democratic control of industry.

These objectives and their many corollaries in every variety and combination exist as functions. Policies vary from the orthodox craft union, asserting its right to bargain collectively with employers to achieve these objectives through agreements, to the revolutionary type of labor organization which has as its objective the overturn of the social order.

Union Leadership. The quality and type of leadership in any union is a reflex of the conditions the union has to meet, the character of work done, the racial background of its membership, and similar factors. Obviously, the type of leadership in an organization of composers in the printing industry, through whose heads and hands pass the news and the scientific, literary, and dramatic productions of the day, will be different in quality and kind from the leadership developed in a longshoreman's union. So too the leadership of a union made up largely of people from politically repressed foreign coun-

tries will vary in kind and quality from one largely composed of native-born, English-speaking people

Where the union is fighting for its existence, the leadership must, in order to lead, reflect this condition. Where the union is accepted as part of the industrial structure, the fighting leadership is replaced by a business type of leader. In any case leadership of a trade union is secured through the exercise in varying degrees of the same general abilities which capture leadership in other fields. Through contests, sometimes of extreme bitterness, the labor leader emerges seasoned with experience to represent the membership of the union. Through such contests and experience a union leader secures an industrial point of view, whereas many of the employer leaders having to deal collectively with the unions secure only an individual plant point of view. This is a real factor in collective negotiations between the employers and the unions. To meet this effectively, the employer must deal through an organization of his industry which is equipped to ascertain the facts and make them available for use by the employers in negotiations with the unions.

In unions as in other types of organizations, there occurs at times leadership of the racketeering character, the sole purpose of which is to exploit the organization for personal ends. Such leadership exists in many cases because of profitable collusion with racketeering employers. Drastic action to purge the union of such leadership has to be taken to reestablish responsibility and industrial order.

Leadership of the unions will be forced in the future to develop, because of the rapidly changing industrial conditions, a more scientific approach to the problems of the industry of which they are a part. Introduction of new machinery, scientific management for the better use of materials, and elimination of waste are factors which will force the union leader to deal with these problems constructively or management will have to turn to other alternatives of labor policy. In any case, it must be remembered that the leaders of a union as of other groups cannot go beyond the ability of the general rank and file to keep up. The spear head can travel no faster than the shaft.

Intraunion Problems, "Inside Politics." The leadership of any mass movement requires an understanding of the motives which inspire men to action; the fears which hold them in check; the passions which arouse them to revolt; and the satisfactions which calm and steady them. These factors in varying degrees a union leader must realize and capitalize if he is to maintain leadership. Divisions within the ranks on objectives and the means of obtaining them give rise to political groups within the union. These different groups play for the power of control by endeavoring to elect leaders who will express their respective aims. These aims may be radical, conservatively progressive, or stand pat. Cleavages, in general, may exist because of certain differences of temperament, religion, racial, or other fundamental factors. This is the fabric of the "politics" of the union. Because of the questions involved, those of jobs, wages, working conditions, living standards, hours, and the like, union political controversy is on the whole more intense than in organizations whose aims are not so sharply focused on vital bread-and-butter economic issues. The union leader must, if he is to lead, play politics.

If he plays the various forces in his organization constructively for the promotion of the interests of his membership and the industry of which he is a part, he may rise to the capacity of statesmanship. If he plays such forces in his organization for personal gain, he may become a sinister factor both in the union and in the industry.

Meeting exigent conditions as they arise, he must to a considerable extent be a pragmatic opportunist. He may know that a certain action is right but that the inside politics of his organization would effectively block him if he attempted to take that action. Sometimes it is necessary to resort to arbitration and have the arbitrator in the case bear the criticism; sometimes it is necessary to wait until conditions are more favorable for action. It is of especial importance that in any collective bargaining situation, whether it affects wages, working conditions, or what not, the management employer group have a seasoned, sophisticated, and reasonably complete knowledge of these political factors inside the union. In many cases, they will determine the result of the negotiations more than the economic issues involved. The responsibility of management is to see that its most experienced leaders are chosen to carry on negotiations or the settlement of current disputes with the unions. Their decision will determine in many cases whether a contract of mutuality of interests will be agreed upon; whether or not the industry will resist because of unreasonable demands; whether or not arbitration must be resorted to; and whether or not the foundation is laid for long time cooperatively constructive relations. In this, management has its own inside political situation to deal with involving inherently some of the same problems the union leadership faces. Any effort on either side to control the inside politics of the other side is dangerous in the long run in that such practices usually result in corruption on both sides.

Interunion Problems; Jurisdictional Disputes; Sympathetic Strikes. Jurisdictional disputes which give rise many times to bitter conflict between the unions themselves and the unions and the employer involve in essence the same elements that are inherent in commercial conflicts for the control of raw materials, markets and prices. For economic self preservation, the union sets up jurisdiction over a certain class of work and builds up its organization on that basis. Any breakdown of that jurisdiction by invasion by other unions threatens not only jobs for their membership, their standards, the training of their apprentices, and the like, but the very life of the organization itself. These are the reasons why invasion of jurisdiction is so stubbornly and bitterly contested, many times resulting in open conflict and warfare. Changing methods and mechanisms in recent years have accentuated this perplexing industrial problem. A classical case is the change in building construction from wooden window frames to metal—the carpenters claiming jurisdiction by the traditional right of possession and the sheet metal workers through technical classification. Another is that of the erection of iron smoke stacks. The structural iron workers claimed jurisdiction because of erection in the air; the boiler makers because they required tight riveting—the work of the boiler maker. In a short labor market with plenty of jobs, the conflict over jurisdictional questions usually abates. In a long labor market with jobs scarce, men will fight on to the extent of killing each other

because it means literally bread and butter for their families. It is management's function first to understand why these jurisdictional questions arise, why they occasion such bitter conflicts and then to set up collectively cooperative industrial machinery which will serve to prevent the difficulty, and, if that is not possible, to localize the trouble so that the conflict will not spread through sympathetic strikes to the entire industry. One of the best examples of constructive effort to meet this problem is in the building trades which industry, because of the wide variety of crafts employed, is peculiarly beset with difficulties of this nature.

The sympathetic strike is a strike of a related union or unions to assist a union on a direct strike. It is a device of correlated labor unions to protect themselves by taking the offensive to assist a union on strike. Usually it will be found that unions having satisfactory wages and working conditions have some compelling reason to call a sympathetic strike; it is obvious that they cannot escape the realization that by such action they place themselves in jeopardy of losing what they have gained. Mere condemnation of their action does not escape the issue. It may become necessary to use drastic measures to stop the spread of a conflagration of sympathetic strikes in an industry. It is a challenge to management to use preventive measures where possible.

Unions in Business; Labor Banks. An analysis of the various union ventures in the field of banking indicates quite clearly that if they conduct these banks on sound banking principles with capable bankers there is no inherent reason why such banks cannot be successful. The danger lies in the use of the large collective funds of the union in banks dominated by union political leaders and not by bankers. The expectations of the promoters in many cases that labor banks would be used to assist employers who might be placed in jeopardy because they are "fair" to the union; that the unions would become educated and experienced in business management; that unions would capture through their collective money power seats of control in industry, if not ownership, have not been realized. On the contrary, indications are that the movement has slowed down as the result of some rather disastrous experiences and will take a long time to recover if it ever does. Those labor banks that still survive do so by following the standards laid down by the conservative old-line banks.

Unions and the Immigrant. The composition and complexion of many of the unions have been determined by the flood of immigration which poured into this country during the years when there were only limited restrictions to entry. Some of the unions were made up almost wholly of old world craftsmen with their racial, religious, and political inheritances. The unions, strengthened by the war and affected vitally by the let-down which followed, besieged Congress to limit immigration in order to prevent flooding the American labor market. This effort combined with other factors resulted in limiting immigration by an assignment of quotas to various countries. The rapid development of automatic labor-saving machinery has been no small factor in promoting restrictions on immigration. The gradual development of craftsmen in this country to do effectively the work done by skilled workers from Europe was another factor. The unions throughout this period

of unlimited immigration had not only the economic problem to face but a tremendous problem of education of their foreign-born members. With the second generation this situation is changing and it can naturally be expected that the character and outlook of many of the unions will change. It is important to understand the historical significance of this background of American unions with their heterogeneous membership in comparison with the homogeneous character, for example, of those in England. To understand why certain conditions exist among the unions of this country, their objectives, their points of view, and the like, must be weighed as factors entering into the question of dealing with these unions. It is a responsibility of management to have historical perspective on vital questions of this character.

Collective Bargaining, the Contract. The purpose of a collective contract is to set forth terms and conditions agreed upon as the most effective working compromise between the organized union on the one side and the organized employers association or the individual employers on the other; it is the self-imposed labor law code of the particular industry setting forth a reasonably well balanced series of premiums and penalties. Within the contract as an inherent part of it must be set up the machinery for joint enforcement, maintenance of industrial discipline and the settlement of disputes which arise over the interpretation and enforcement of its terms.

Specifically the contract should include:

1. Identification of parties.
2. Definition of jurisdiction.
3. Duration.
4. Settlement of disputes.
5. Working conditions.
 - a. Hours.
 - b. Lunch periods.
 - c. Holidays.
 - d. Overtime.
 - e. Payment of wages.
 - f. Quitting work, lay-offs, and discharges.
 - g. Foreman and his authority.
 - h. Character of work to be performed.
 - i. Complement of men on various types of machines.
 - j. Apprentices.

Supplementing the contract should be an arbitration agreement setting forth procedure to be followed in the settlement of disputes which cannot be settled through the joint conference committees set up in the contract itself. By formulating the wage-scale contract and the arbitration agreement as separate instruments but with each instrument making reference to the other, it is possible to modify either one without affecting the other.

Before entering into a collective labor contract, contracts in use in various industries should be carefully studied to determine the most effective form to be used and to realize on the experience of those groups which have had agreements over a fairly long period of time. It is necessary of course to

adapt the contract form to include that character of substance which is suited to the particular groups involved.¹

Under any collective contract relations the joint machinery for interpretation, enforcement and settlement of disputes is of especial importance. A suggested form of structure for such joint machinery may be briefly outlined as follows:

1. A joint conference committee made up of equal representation from the union and the employers with voting power equal—a majority of each side to be secured for a decision. Upon failure to agree, the procedure for adjudication to be through the selection of a jointly agreed upon arbitrator whose decision is to be final and binding on both sides. This is the supreme court of the contracting parties. The jurisdiction of this joint committee covers:

- a. Grievances involving alleged violations of contract.
- b. Interpretation of contract clauses.
- c. Terms of the introduction of new machinery and processes.
- d. Renewal, amendment, expiration of agreement.
- e. Any special matters involving precedents to be established for the industry.

2. A joint discharge committee made up of equal representation from the union involved and the employers association. A majority vote of each side required for a decision. The jurisdiction of this committee to cover:

- a. The final adjustment of discharge cases which are brought up on appeal by the plant or union member through their respective organizations. It is important that the right of discharge should be vested in the foreman subject, in order to avoid abuse, to review by the joint discharge committee if asked for by either party.
- b. The outlining of procedure governing the trials of discharge cases and the laying-down of rules to guide the employers and the employees parties to the contract.

3. A joint apprenticeship committee made up of equal representation from both sides—a majority vote of each side to be necessary for a decision. Provision to be made for the selection of an arbitrator if deadlocked or for reference to the joint conference committee if the question involved requires an interpretation of contract. The jurisdiction of this committee to cover:

- a. The study, investigation, and report on the enforcement of the apprentice regulations as set forth in the contract.
- b. The trial of apprentice cases with full authority to cancel the apprenticeship in cases of lack of aptitude, delinquency, or violations of discipline—subject to the general conditions as set forth in the contract including:

Ratio of apprentices.
Regulation of apprentices.
Qualifications.
Term.
Jurisdiction.
Duties.
Grading.

¹ The Taylor Society through a special committee has set forth in a proposed "industrial employment code" certain minima which might serve as a guide in the drafting of contracts; presented in tentative form at a meeting, Dec. 5, 1930.

Education.

Discipline.

4. Administration of the contract.

- a. By individual employers and the union.
- b. By employers association and the union.
- c. By permanent boards appointed by the industry in question in one city or region.

Administration of the Contract. 1. *By Individual Employers and the Union.* Unless the individual employer is one in a locality in which there are no other plants dealing with the union, or there are other limiting factors, he should join his employers' association in order to provide effective joint machinery to protect his own interests. If he must deal individually with the union, he should insist on an arbitration agreement either as a part of or supplemental to his contract in order for him to have the means of settling any disputes or grievances with the unions. With such an arbitration agreement the set up should be equal representation on a joint conference committee for the plant and the union with a majority vote of each side necessary for a decision, in cases of deadlock the matter to be referred for final decision to a mutually selected arbitrator. It would be advisable for the plant to designate someone in its organization to deal with the union representatives for the investigation of the facts in cases, and to adjust the case if possible without bringing the matter to the joint committee.

2. *By Employers Association and the Union.* In an industry covered by a collective contract, the individual plant is included through membership in an employers association. Within the plant unit each union has a representative, usually elected by the members of the particular union in that plant. Minor grievances are taken up by the union plant representative with the foreman, and cases not involving precedents or new interpretations of contract are usually settled without going to the joint committees. Upon failure to agree, the union representative refers the matter to his organization and the foreman through the management to his employer organization. The next step is for a representative of the union and of the employers association to investigate the facts and make a decision in the plant, if the case does not involve a precedent or a new interpretation of the contract. If the plant or the individual union member involved disagrees with the decision, the case is brought before the joint committee having jurisdiction as defined by the contract.

To make the above machinery effective in practice, it is necessary for both organizations to maintain representatives currently to carry on this work. Usually it is done through the paid officers of the union and in the employers association through an individual assigned to this work or, depending on the scope and content of the industry, through the establishment of an industrial relations department with a director. The functions of such a department are:

- a. To study the entire situation governing the relations between the industry and the unions.
- b. To get all pertinent facts affecting this relationship and have them available for the employers' committees.
- c. To investigate all individual cases of dispute and make rulings in accordance with contract conditions.
- d. To prepare cases for arbitration and assist in the selection of an arbitrator.

- e. To rewrite contracts for submission to wage negotiating committees.
- f. To supervise the machinery set up for the education of apprentices and report to the employers' apprenticeship committee recommendations for improvement.
- g. To promote good will through confidence and at the same time protect the interests of the plants represented in the association.
- h. To carry on special production studies on different types of equipment with special reference to the manpower needed and skills required.
- i. To arrange joint committee meetings for handling of all cases.
- j. To assist the employers association in securing additional eligible members.
- k. To act in general secretarial capacity keeping minutes, records and other supplemental work in this field.

3. *By Permanent Boards Appointed for the Industry in Question in One City or Region.* This plan of joint enforcement machinery is best exemplified in the men's clothing industry. Instead of depending upon joint committees set up within the industry itself and the selection of a combination conciliator-arbitrator when needed, a permanent board with an arbitrator jointly selected and paid by both parties is used. Union representatives are elected by the members in each individual plant and minor cases are settled as they come up, both sides having the right to go to the arbitrator if a settlement is not reached. Representatives of both the union and the employer appear before the arbitrator and present the facts. The conciliator-arbitrator, acting under the stipulated conditions agreed upon by both parties, endeavors to reach a settlement through conciliation; if he cannot, he has the authority to make the decision.

The plan has the advantage of securing arbitrators' decisions which have some continuity and obviates the difficulties involved in selecting an arbitrator in each case as needed. On the other hand it has the disadvantage that the representatives of both parties refer cases for settlement which it would be conceivably safer in the long run to have decided by men actively engaged in the industry as under the joint conference committee set-up.

Strikes, Boycotts, and Disputes over the Union Label. A strike, like a declaration of war, is the resort to the ultimate test of strength for the determination of an issue, the settlement of which is either not justiciable or for which the justiciable machinery is lacking or has failed. War declaration of a defensive character is made when there is an invasion of territory or there is a challenge to sovereignty. Reversely, offensive war is usually either to invade territory or to challenge sovereignty. Strikes, in the same category as war, are both offensive and defensive. The unions as a collective group use the strike to secure if they can a greater share of the economic income. To achieve recognition when it is denied, the union resorts to direct action as a method to establish its "place in the sun." If attacked by an invasion, to reduce wages, the strike may be used to avoid the action or to force a compromise. If an effort is made through a lock-out to break up the union and substitute non-union labor, then there arises an inevitable conflict unless the union is too weak to resist. The causes of strikes are of course many and varied. In the last analysis, however, they can be partly classified defensively or offensively under the two broadly general causes, either invasion of territory or challenge to sovereignty. The strike may be untimely;

it may be ill-advised; it may fail in its purpose; it may invite public condemnation or public approval and support. In any case, the events leading up to the strike, the complex of motives and the economic issues involved, must be objectively understood if the conflict is to be settled with the minimum of loss to all parties involved. Direct action conflicts occur over wages, working conditions, hours, recognition, jurisdiction, introduction of labor-displacing machinery, secession of local unions, and other vital issues. Strikes are costly to both sides and ordinarily with a fairly even balance of power with the outcome doubtful there is the tendency to use less costly methods, conciliation or arbitration. If the union has the balance of power the tendency is to use it to the full extent at the time either through the constitutional channels set up, which they naturally endeavor at the time to control, or through direct action of the strike.

The primary counter offensive and defensive measure used by the employer group, the lockout, is essentially the same in principle as the strike. Both are extreme measures used as a last resort to exercise control to force a more satisfactory workable compromise when other methods have failed.

The boycott is the use of economic pressure without open conflict to force terms. It is an effort to practice the blockade to cut off supplies and force one side or the other to submit. One side or the other uses its economic strength through the withdrawal of its purchasing power, refusing to buy or use goods or employ labor, or shutting off sources of supply. It is the use of the siege to starve out the opponent without resorting to the use of direct force. Like the set up in the covenant of the League of Nations, the economic boycott is a preliminary measure to force terms and if unsuccessful there is the avowal that the next step is open and direct action in the form of war to settle the issue. There is no general rule which can be followed to wholly avoid the use of these weapons. There is the opportunity with a full understanding of causes to arrive at working compromises without resorting to open conflict. This requires a constructive program and a promotion of reciprocal interests.

The union label is the "trade-mark" of union labor used to indicate that the goods which bear this label have been manufactured under conditions approved by the union as fair. It is used by the manufacturers of goods to invite the purchase by members of organized labor of their goods or to avoid resistance to their purchase by members of the unions. The union label is used to a great extent in political campaigns when there is the desire to secure the union vote. In certain industries with many unions, there is a combined label which means that all of the unions in that industry have been recognized. In many cases, each of the individual unions have their own label and stamp it on the product to indicate to other unionists that the product which bears the label is union made and should therefore be purchased by them to support the labor movement.

In the use of the label by combined groups, many disputes occur through the fact that the unions supporting the label vary in strength. Unions having little strength are unable to assure protection to the employer of uniform wages and other conditions. Non-union plants doing one or several of the processes and taking in contract work, that is from other plants,

come into existence operating at lower costs than the union shops. Conflict comes over work sent out to these non-union contract shops specializing in one of the processes of manufacture which cannot be done by the union plant at the same cost. The use of the label by the union is another device of the unions to secure a monopoly of manufacturing. It is only partially effective. As a matter of policy it is up to the individual plant to decide whether or not the union label is sufficiently valuable as a trade mark on their product to justify its use.

Arbitration. Voluntary arbitration is a method used in this country to settle issues which cannot be settled through compromise in joint negotiations of the parties involved. In labor cases arbitration is of two kinds: (a) the arbitration of the vitally important questions of wages, hours, and working conditions when new contracts are involved; and (b) the arbitration of questions coming within the scope of a mutually agreed upon contract over which there is a difference of opinion as to interpretation of individual sections. Because of the fact that the settlement of wages or hours and working conditions for a new contract involves fundamentally a test of strength of the two parties for economic advantage, it all depends on the exigency of circumstances whether or not arbitration will be used as a means of settlement. With one side or the other possessing predominant power to take what it wants, arbitration stands in the way of fulfillment. The tendency on the part of any group is to use its economic power to the limit to force its demands. The weak side advocates arbitration because there is usually nothing to lose and something to gain. In such cases, where arbitration is finally agreed to, the battle over the selection of an arbitrator reflects the efforts of each side to capture the mental margin of the arbitrator in the hope that the decision will be in their favor.

Deadlocks are most likely to occur over issues which are involved in the establishment of a new contract. With the old contract terminated, both sides are free to use their economic strength and are very cautious in committing themselves to an agreement which binds them to waive in whole or in part what they respectively conceive as their right of might. If the respective sides are at issue on questions which involve placing their organizations in jeopardy, such as the recognition of the union on the one side or the right of discharge of the employer on the other, there is a remote chance of securing an agreement to arbitrate. If the issues, however, involve only the question of wages, shop practices and the like, and conditions are not abnormal, such as those which occurred during and following the war, arbitration is resorted to as the best device known to secure a settlement. Seasoned leaders on both sides realize the tremendous cost of industrial warfare and after making their various gestures or threats in an endeavor to feel each other out are inclined to choose arbitration as an alternative. Where practicable an arbitration agreement should extend a month or two beyond the termination date of the wage-scale contract; in any case the wage-scale and shop-practice contract should contain as one of its essential parts the agreement to arbitrate any disputes arising over the interpretation and enforcement of the conditions set forth in the contract. The arbitration agreement should set forth the procedure to govern both parties in presenting cases.

Defining the Issue. One of the fundamental requirements in any arbitration proceeding, whether labor or commercial, is to define the issue. This is very important in order to confine the arbitration to the issue as defined. The best procedure is to define the issue in a mutual submission agreement which both parties sign. This mutual submission agreement has the value of definitely confining the arbitrator to the issue submitted and committing both sides to accept the decision as final and binding for the period set forth in the submission. A satisfactory form used in a number of actual arbitration cases is as follows:

Mutual Submission Agreement

Union proposals	Employers' proposals
Wage scale and shop conditions contract:	Wage scale and shop conditions contract:
between	between
and	and

(State respective demands under each caption.)

- | | |
|---------------------------------------|---------------------------------------|
| 1. Duration of contract. | 1. Duration of contract. |
| 2. Wage scales. | 2. Wage scales. |
| 3. Shop rules and working conditions. | 3. Shop rules and working conditions. |

The above statement of issues is the result of conciliation conferences between the authorized representatives of _____ and _____.

The items in dispute are specifically set forth in this submission and these items only are submitted to arbitration for a decision.

It is agreed that the decision made on the items in dispute as set forth in this mutual submission agreement shall be final and binding on the constituent organizations of both parties to this submission for the duration of the new contract. We herewith this _____ day of _____ of _____ affix our signatures in agreement to the above submission.

Signed

For the union:

Signed

For the employers' organization:

There are cases in which the unions when endeavoring to avoid arbitration and in order to resort to force or the threat of force have attempted to limit the right of the employer to state his own demands. The employer can in no case concede this point without leading himself into a "heads I win, tails you lose" type of arbitration. This applies with equal force where the employer reverses the situation. Both sides must be left free to state their own demands, no matter how extreme these demands appear to be. It is inviting industrial conflict to do otherwise. The following general principles are suggestive as a guide in safeguarding arbitration for long time use as a method acceptable by both sides to settle issues which may arise from time to time in their relations one with the other:

1. The entering into of an arbitration agreement to arbitrate wage contracts is a matter for consideration and mutual agreement by the parties at interest.

2. The constitutional laws covering the internal government of each organization should be understood as exempt from arbitration.

3. The arbitration agreement should be entered into as a part of the contract for wages and should provide arbitration both of current cases arising under the contract and, if at all possible, the basis for arbitrating new contract conditions which cannot be agreed upon in negotiations.

4. The date of termination of any arbitration agreement must be definitely fixed so that at the date of termination both parties will be free agents to enter into another agreement or refrain therefrom.

5. The arbitration agreement should contain a clear and complete code of procedure.

6. The issues in arbitration should be clearly defined and a mutual submission signed by both parties stipulating that the arbitration is confined to those issues and neither party is bound if the arbitration decides issues not submitted.

7. The right of each side to state its own demands must be maintained.

Selecting the Arbitrator. The selection of an arbitrator to decide issues arising over the interpretation of contract clauses already agreed upon involves inherently less difficulty than the selection of an arbitrator to decide the conditions to be incorporated in a new contract.

After arbitration is agreed to as a method of settling the controversy involved, the two parties at issue usually proceed to exchange a list of names. The first list submitted represents possible arbitrators who are distinctly partisan for one side or the other. Each side agrees that if any name on either list is objected to by either side, the name is thereby, without further reason, rejected. As other lists are suggested the tendency is to get nearer and nearer to the impartial type of arbitrator who will be trusted by both sides to make a fair decision. When the list narrows down to a few names through the process of elimination, sometimes these names are placed in a hat and one taken out at random with an agreement by both sides to abide by the result. Another method is for each side to select respectively one man and have the two select the third. There is no absolute rule which can be laid down to settle all deadlocks. In the end one side or the other, no matter what method is used, has, from its point of view, to give in. All that can be done is to narrow down the choice through the exchange of names to someone who is considered reasonably impartial and fair, and gamble on the result.

Preparing the Brief. Unlike legal cases in which there are established precedents which are recorded and to which reference can be made for decisions on the law in point, labor arbitration cases arise out of a complex of dynamic economic forces which mean in each case a new combination. Each side uses what material there is immediately available to prove its case. The procedure is usually for each side to draft a *prima facie* brief, setting forth the basis for its respective contentions. These briefs are submitted to the arbitrator at a hearing arranged for the purpose and the complainant or plaintiff in the case proceeds first to read the brief to the arbitrator without interruption except by the arbitrator. The defendant then in turn reads his

brief and copies are exchanged between the two parties. The arbitrator is given a copy of each brief. If either brief includes statements which the other side desires to check and then submit a rebuttal brief, that privilege is accorded and a second meeting arranged for the rebuttal and sur-rebuttal. There are closing arguments by both sides summarizing their cases and the matter is then left in the hands of the arbitrator to decide.

The brief is usually made up of the following essential parts:

1. A description of the parties involved, whom they represent, the number of people affected by the decision.
2. A short background history of the case and the events leading up to arbitration.
3. A statement of the issue or issues with reference to the mutual submission agreement jointly signed.
4. A list of the points which are important in the case and which are by evidence to be proved.
5. A submission of the factual evidence with exhibits and references or witnesses.
6. Argument, based upon the evidence submitted, showing the reasons why the case should be decided in favor of the party submitting the brief.
7. An appendix of exhibits.

Arbitration hearings do not follow strict rules of evidence but rather endeavor to bring out in open hearings the various points each side has to present until each is satisfied it has had its full say. This procedure permits the submission of material which would not be allowed under rules of evidence. It has, however, the obvious advantage of giving each side the opportunity to the limit to state its case.

Permanent Boards of Arbitration. The method of selecting an arbitrator or board of arbitrators for each particular case when it arises has certain disadvantages. Among them are (1) the inherent difficulties involved in finding a mutually agreed-upon board of arbitrators; (2) each new arbitrator or board selected has to be familiarized with the particular industry and the issues involved; and, (3) decisions made by such changing arbitrators or boards lack continuity. These realized disadvantages have caused some industries to set up what are termed permanent boards selected when controversy is not at its height and available when needed. The set-up of these boards varies, but they usually include one or two representatives from each side with a neutral umpire. Permanent boards set up to overcome certain disadvantages in the temporary boards, have developed certain disadvantages in themselves. Among them are: (1) the industry, instead of placing responsibility on the joint conference committees, made up of leaders on both sides, to conciliate and arrive, if possible, at a decision, is inclined to follow the line of least resistance and load up the permanent arbitrator or board of arbitration with cases involving minor issues; (2) the possibility of the permanent board being discredited because of decisions objectionable to one side or the other; (3) the difficulty of finding men not directly engaged in the industry who will give of their time to the constant adjudication of cases; (4) the danger of, centralization eventually, of too much power in one man or the board.

Both set-ups have merit and are respectively to be adapted to meet the needs of the particular industry for which they are best suited.

Whatever the set-up, the plan should be simple and direct. Experience has indicated that in the long run the definite set-up of permanent joint conference committees made up from representatives of the union involved and the employers who are actively engaged at the trade, has its roots deeper in the industry than permanent boards of arbitration set up with outside representatives and a jointly paid arbitrator. The two plans may be compared through a comparison of the plans in operation respectively in the printing industry and in the clothing industry.

In Canada and Australia the set up of permanent boards is governmental and arbitration is compulsory. Anyone interested in the procedure of these compulsory governmental tribunals and the results obtained can easily secure references covering this subject.

CHAPTER XII

EMPLOYEE REPRESENTATION

BY EDWARD S. COWDRICK

Definition and Classification. The term "employee representation" ordinarily is applied to any method of collective dealing between the management of a company and representatives elected by the employees from among their own number. Mass meetings of employees or occasional negotiation between the management and delegates selected to discuss specific subjects do not constitute employee representation in the proper sense of the term. Union-management cooperation, although it resembles employee representation and in some borderline cases is almost indistinguishable from it, is not treated in this chapter; it is discussed in Chapter XI on the subject Collective Bargaining with Unions. Some of the suggestions here given, however, are applicable equally to employee representation and to union-management cooperation.

Types of Representation Plans. Plans of employee representation show wide variations in the machinery of negotiation which they set up, in the methods of administration, and in the purposes of employers and employees. Structurally, nearly all existing plans fall within one or the other of two groups:

1. The governmental type, in which the organization resembles that of the United States government, with a senate, a house of representatives, and sometimes a cabinet.
2. The works-council type, in which the governmental machinery is lacking and in which negotiations are conducted mostly through joint conferences and joint committees.

A number of plans in the works-council classification belong to a subgroup which might be designated as the employees' association type. Under these plans the employees of a company, plant, or department are organized in an association which functions for representation and sometimes for social and other purposes. Occasionally the officers of the association serve as employee representatives.

Most of the existing plans of representation, especially in the larger companies, belong to the works council rather than to the governmental type. The term "works council" usually is applied to a joint body composed of all of the elected representatives and an equal or smaller number of appointed representatives of the management. The terms "joint conference" or "general conference" are usually synonymous with works council. Some-

times the employee representatives have a separate organization which meets without the presence of company officials.

Subordinate to the works council or joint conference, there may be a number of standing committees, each having jurisdiction over one subject or a closely related group of subjects. Sometimes these committees are composed wholly of elected representatives; more often they are jointly constituted.

Decision as to Desirability of Employee Representation. A manager contemplating the adoption of a representation plan should first of all determine whether or not representation of the employees in his company is desirable. He should not propose it simply because it has been a success in some other organization. He should consider the purposes of employee representation and determine whether or not these purposes conform to the desires of the management in his company.

Employee representation, in a plan properly prepared and adopted, and administered intelligently and in good faith by employees and management, may be expected to attain these objectives:

1. Provide a double-track channel of communication between management and employees.
2. Furnish machinery for the equitable adjustment of grievances.
3. Serve as a means for collective negotiation on wages, hours and working conditions.
4. Educate employees and officials and help each to understand the viewpoint of the others.
5. Provide means for constructive cooperation in the fields of safety, efficiency, and economy.

If the management of a particular company wishes to gain these ends, a plan of employee representation may be the best means of doing so, always assuming that the labor situation is auspicious for adoption of a new method of collective dealing and that the attitudes of employees and officials are favorable. Preferably, representation should be proposed during a time of labor tranquillity. A plan launched in a last minute effort to avert a strike, or to anticipate a unionization campaign, runs grave risks of failure. To the manager who contemplates the adoption of employee representation as a means of "putting something over" on his employees, or who is unwilling to deal fairly and frankly with representatives, the best possible advice is "Don't!" For his type of management any other method of collective dealing, or none at all, will prove more suitable.

Preparation and Adoption of Plan. In a few companies employee representation has been adopted at the request of the workers themselves. This is a desirable initiation, but one scarcely to be expected in ordinary circumstances. Usually management has to make the first move. Even so, it is well to enlist the cooperation of employees at an early stage in the negotiations. In some companies plans have been prepared by joint committees representing employees and management. In others, plans originally prepared by the management have been submitted to a vote of the employees before their adoption. The extent of employee participation at this initial stage will depend upon the circumstances of a particular company.

In any case the plan should be thoroughly "sold" to foremen, superintendents, and other line executives before it is put into effect. The cooperation of these officials is almost indispensable to the success of the project, and this cooperation will be secured with difficulty, if at all, if they are ignored in the adoption of a new labor policy. Foremen once enlisted in support of representation may sometimes be entrusted with the task of explaining the plan and the purposes of the management to the employees in their departments.

Terms of Representation Plan. In deciding upon the precise terms of a representation plan it is advisable, especially if the management has had no previous experience with this form of collective dealing, to make an extensive survey of successful plans in effect in other companies. These plans will be found to present almost infinite variety. Final decision on each point should be based upon the needs and the circumstances of the particular company for which the plan is being prepared.

In some companies, representation has been introduced with extremely simple plans, containing only the absolutely necessary provisions, and detailed rules and procedures have been developed later through processes of evolution. Generally, however, it is considered better to have the constitution of the representative system prepared in full before the plan is put into operation.

Basis of Representation. It is usual to provide for a numerical basis of representation, depending partly upon the size of the plant. One representative for from 10 to 50 workers in a small shop or one representative for 100 to 300 or more workers in a large factory are typical. Usually it is best to arrange voting districts in such a way that each representative shall serve a group of workers with whom he is acquainted and with whose duties he is familiar.

Elections. Elections usually are held annually, sometimes with an overlapping arrangement under which only half the representatives retire at each election. Generally representatives are eligible to be reelected for an indefinite number of terms. A few plans provide for very frequent elections—once in six months or once in three months—but generally this is not desirable. Elections should be by secret ballot, preferably conducted by the employees themselves or jointly by employees and management. Officials may properly urge employees to participate but they should scrupulously avoid any appearance of influencing the vote. In many companies separate votes are taken for nomination and election and this usually is considered good practice, especially in large plants where the employee is likely not to be well acquainted with all the men in his voting district. Voting should be on company time. Efforts to get employees to attend meetings for election, outside working hours, have not usually been successful.

Joint Conferences. In most plans of employee representation the basic element is the joint conference, made up of all the employee representatives elected from the plant or unit concerned and an equal or smaller number of appointed representatives of management. This joint conference usually is the reservoir for whatever authority over the company management is granted to the employees. It serves as a deliberative body and as a forum for the discussion of any subjects of mutual interest that may be suggested by employees or management.

Votes in joint conferences usually are on an individual basis, a majority of the entire number of delegates being required for a decision. In a few plans, however, systems of unit voting are in effect and the representatives of employees and of management caucus separately to determine which way the vote of each side shall be cast. The system of individual voting is preferable, since it makes it easier to avoid sharp issues between employees and management. As a matter of fact, in most of the successful representation plans, the frequency and the importance of voting in conferences have steadily declined and most questions are settled by integration or compromise or by general consent.

In a few representation plans general joint conferences have mainly or wholly disappeared and the largest meetings include representatives of single sections or departments. Some plans provide for separate meetings of employee representatives with no officials present. There are numerous other variations of the joint conference idea. In most circumstances it is preferable to retain the general joint conference and to build up its prestige.

Conducting Conferences. Much of the success of a representation plan will depend upon the skill with which conferences are conducted. For this the responsibility ordinarily rests with the management representatives. There is danger that conferences will become routine and perfunctory and that unless the employee representatives present grievances there will be nothing of interest to discuss. Some companies have made special studies of the technique of conducting conferences and have taken much care in instructing conference chairmen in their duties.

Sometimes subjects for discussion are prepared long in advance and are sent out from the central headquarters to the various chairmen for presentation at their conferences. While this practice is open to criticism as tending to rigidity and to the discouragement of individual initiative on the part of the chairmen, there is no doubt that a reasonable amount of leadership in selecting subjects and planning discussion is necessary. Subjects of mutual interest may include the current business situation affecting the company, prospects for orders and for steady work, accident prevention, the promotion of health, and the initiation and management of the various industrial relations plans in effect or proposed in the company.

In conducting a conference it is advisable to give the employee representatives an opportunity first to present complaints or suggestions on behalf of their constituents. Subjects initiated by the management may then be introduced. Full discussion should be encouraged, especially on subjects brought up by the employees. There should be no appearance of stifling free speech. On the other hand, the chairman needs to be on guard against the danger that the conference will degenerate into interminable argument or gossip over some unimportant topic. Success of the conference depends largely upon the chairman, particularly if he is a representative of management, and he should take his duties seriously and make earnest efforts to prepare himself for them.

Committees. Some representation plans provide for executive committees or boards of appeal, to which may be referred important subjects either before or after they are considered in joint conferences. In a large plant

where the works council is of unwieldy size, it is sometimes advisable to call it together only at infrequent intervals, perhaps once in two or three months, and to leave most of the actual work to a small joint executive committee.

Some representation plans provide for the appointment of standing committees, each entrusted with matters related to one subject or to a group of affiliated subjects. Generally these committees are made up of equal numbers of representatives of employees and of management. Sometimes, however, there are committees of elected representatives only.

Standing committees may serve a useful purpose in considering complaints or suggestions and perhaps settling them before they reach the general joint conference. In one company the standing joint committees bear the following titles:

- Joint committee on cooperation, conciliation, and wages.
- Joint committee on safety and accidents.
- Joint committee on sanitation, health, and housing.
- Joint committee on recreation and education.

In some companies joint committees or committees of employee representatives conduct elections and have charge of the organization of each new joint conference. It is good practice to have joint standing committees report at each joint conference meeting. Some representation plans require a written annual report from each committee, outlining its work for the entire year.

Salaried Employees and Representation. Foremen generally are considered representatives of management and sit in that capacity, if at all, in joint conferences and joint committees. A few companies have experimented with separate representation plans for foremen and in some others wage earners are permitted to elect foremen to represent them. Neither practice is desirable.

There has been some difference of opinion as to whether office workers and other salaried employees of non-supervisory grade should be included along with wage earners in a representation plan. Generally it will be found better to exclude these employees, on the theory that they are potentially, if not actually, a part of the management. This rule should perhaps be modified, however, in companies where large numbers of clerical or other salaried employees actually make up a considerable portion of the rank and file. In some public utility companies, for example, a plan which did not include office employees would scarcely be representative of the working force.

Adjustments and Appeals. An essential function of representation is the settlement of grievances and the adjustment of disputes between employees and management. Companies have handled this function by different methods and with different degrees of success. Unwillingness to deal fairly with employees or lack of intelligence in administering a representation plan is likely to result in interminable wrangling, with consequent suspicion and ill will on both sides.

In adopting a representation plan, the management should make up its mind just how much authority it is willing to delegate to employees or to joint conferences or committees. Precedent can be found for almost any

variation, from purely advisory committees at one end of the scale to "management by town meeting" at the other. It is significant that the success of a representation plan or the degree of confidence which it inspires among the working forces seems to have little connection with the amount of authority granted to the representatives. Of the plans which have had outstanding success some are amply provided with "teeth," while others grant to the employees little or no authority in matters of management. Another significant fact is that in some companies, the terms of whose representation plans give wide powers to the representatives, these powers are seldom exercised.

One may safely conclude that under typical conditions a works council, whatever the terms of its constitution, functions less as a judiciary body for the formal adjustment of controversies than it does as a discussion group in which misunderstandings are cleared up and differences of opinion settled informally through compromise or integration.

It should be remembered also that few if any representation plans are designed to bring about "industrial democracy" or to turn the management of the business over to the wage earners. Usually the wage earners have no desire to manage the business. What they want is a reasonable degree of control over things that concern themselves—notably wages and working conditions. There is room for argument as to what constitutes a reasonable degree of control, but whatever may be the verdict on that point, there seems to be little doubt, in the light of experience, that the workers can influence shop conditions about as effectively under an advisory plan as under one that ostensibly provides for actual sharing of management responsibilities. The fairness of both sides, and their willingness to cooperate and compromise and to see things from each others' viewpoints, are the really vital elements.

Settlement of Grievances. In the adjustment of personal grievances, it is good practice to insist that the foreman directly concerned be given an opportunity to satisfy a complaining employee before a case is taken over his head to higher executives or to a joint committee or joint conference. It is preferable to have the individual employee with a grievance take it up with his foreman before even consulting his employee representative, but this should not be insisted upon, since there may be valid reasons why the employee hesitates to approach his foreman without support. Some employee representatives adjust many complaints informally, either by talking them over with the foremen concerned or by showing the complainants that their cases are without justification.

One factor by which to judge the successful administration of a representation plan, is the proportion of grievances that are satisfactorily adjusted in the departments in which they arise, without the necessity of appeal to higher executives or of adjudication in conference or committees. If a foreman fails to make a satisfactory adjustment, however, the way should be left open to appeal the case to the foreman's superiors or to whatever machinery is provided in the representation plan.

As to just where the right of final decision should rest, there is much difference in theory and practice. Some representation plans provide for enforced arbitration or for appeal to an impartial outside body; for example, the U. S.

Department of Labor. Others limit the appeal to the president of the company or the board of directors. In still others there is no provision for further action if the joint conference fails to reach a majority decision, the theory here being that in such a case the machinery of representation has simply failed to function and the rights of each party remain just where they were when the controversy started.

Authority for Discharge. Under almost all representation plans, a complaint that an employee has been unjustly discharged is an individual grievance, which may be adjusted by whatever machinery is provided. The plans of a few companies include specific lists of offenses for which, and only for which, an employee is liable to discharge without notice. Under this kind of an arrangement the only question that logically could be taken up through the representation plan is as to whether or not the offense was actually committed. In some companies foremen and employment managers make a practice of consulting employee representatives in advance before discharging a workman. This is a desirable method, since under modern systems of employment and discipline there are relatively few discharges for cause and those few are readily explainable.

Representation and Wage Setting. Under practically every representation plan wage rates are open to discussion in conferences and committees and a complaint regarding wages has the same standing as any other grievance. With this generalization, however, similarity among the practices of different companies ends. Examples may be found of almost every possible relationship between wage setting and representation. Some companies agree that general changes in wage levels shall be made only with the consent of the employee representatives. Others consult the representatives in advance before setting new rates. In still others employee representatives participate in time studies. In many companies, however, rate setting is wholly divorced from the representation system—perhaps also from the industrial relations department—and the only function of employee representatives is that of protest against alleged inequities.

In times of business depression or falling commodity prices, some companies have successfully negotiated wage reductions with the employee representatives. Other managements, however, believe that this procedure is wrong in both theory and practice and that it is unfair to ask representatives of the wage earners to consent to reductions in pay.

On this whole subject it would be difficult to lay down a rule applicable to the conditions of all companies. Certainly the management should be willing freely to discuss wage questions and should take every proper opportunity to explain to the employee representatives the basis of wage determination and the methods by which rates are set. There should be no attempt to shut off wage discussion or to prevent employees and their representatives bringing up wage complaints. Beyond these general principles the exact relationship between wage setting and representation can best be determined by each company in view of its own conditions.

Problems of Multiplant Companies. Special problems arise when a corporation has several plants or operates through subsidiary companies. Present-day industrial philosophy inclines to the policy of giving the plant

manager wide authority over industrial relations and other local operating problems. At the same time it is generally recognized that labor management, at least in its broader principles, should be uniform throughout a corporate organization. In some companies employee representation has been adopted on the initiative of the top management and the plans at various plants are similar, if not actually uniform. In others, particularly where representation has been initiated at the separate plants, wide variation is found in the different plans and in the methods by which they are administered.

Under normal conditions it is preferable to have company-wide agreement, at least on the general principles of the representation system, and to modify these principles in practice only to the extent that differing local situations make variations desirable.

Meetings of Representatives from Different Plants. In some companies representation plans provide for general meetings attended by representatives from all plants, even though these units may be widely separated geographically. In others the largest representation unit is the separate plant and no provision is made for contact between representatives of more than one mine, factory, or office. Various compromises are made between these two extremes, as, for example, when conferences are attended by representatives from all the plants in a given geographical area or from all the operations of one subsidiary company.

The weight of present-day thought seems to incline toward the limitation of representation activities to the single plant, although the general officers of a company usually maintain contacts with representatives of various plants and appeals generally can be taken beyond the local manager.

Executive Contacts. If any one thing is essential to the success of employee representation it is the continuous interest and cooperation of the company management. No representation plan is good enough to run itself. No mistake is more disastrous than that of believing that a representation plan, once adopted and set in motion, will operate automatically to adjust industrial relations.

Functions of Higher Executives. Support of the representation plan should start at the top. If the president of a company is too important a man to take an interest in representation, that company probably will get along better under some other form of labor management. The president should have—and has under most representation plans—a place in the line of appeals open to the employee with an unsatisfied grievance. It is desirable to have him meet the employee representatives at least occasionally. In some companies the president attends one joint conference at each plant every year and addresses the delegates on business conditions or other subjects of mutual interest.

The highest operating executive of a department in which representation is in effect—for example, the general manager or the vice president in charge of manufacturing—ought to maintain an active relationship to the representation plan, attend meetings when possible, confer with representatives on suitable occasions, and in general assume the responsibility for the administration of the plan.

Naturally much of this responsibility will be delegated to plant managers. These officials should attend most of the works conferences at their plants; confer frequently with the representatives; hear cases on appeal; announce company decisions, and explain company business conditions. In the ordinary routine of labor administration the plant manager usually is the highest executive who has frequent dealings with the representatives and will naturally be looked upon as the spokesman for the company management. This, however, does not relieve the general officers of the company of their responsibilities in connection with the representation plan.

Functions of Superintendents and Foremen. Department superintendents, general foremen, foremen, and subforemen should cooperate in the administration of representation in the departments or shops under their jurisdiction. To these officials falls much of the responsibility for day-to-day negotiation with employees and representatives over suggestions, grievances, and other matters related to the routine of the shop. Some superintendents, and even some foremen, make a practice of holding regular departmental or shop conferences with representatives of the men under their jurisdiction. Conferences of this kind may be of great value both to management and to employees.

Under the most approved practice employees or their representatives are required to take up complaints with the foremen directly concerned before appealing them to higher officers or seeking satisfaction in joint conferences or joint committees. Thus a foreman is always given the first opportunity to adjust a complaint.

With successful operation of the representation plan it usually is found that a continuously increasing proportion of all complaints are settled in the shops where they arise. This policy, however, should not be pushed to the extreme of allowing a foreman to make a decision, right or wrong, and be sure of support from his superiors. The old notion that discipline could only be maintained by invariably backing up the foreman or the superintendent has been discarded in companies that have modern labor policies.

Some foremen have found employee representatives distinct assets to them in managing their shops. By cooperating with these representatives and explaining company policies to them the foremen have secured their support and assistance in handling disciplinary cases and relaying information to the rank and file of the working force.

Foremen and superintendents often serve as management representatives in joint committees and joint conferences. A few companies hesitate to appoint first line supervisors to these positions, on the ground that employee representatives will not talk freely in the presence of their immediate superiors. Majority experience, however, does not support this theory. In most companies it has been found advantageous to gear the foreman directly and actively to the representation machinery.

Whatever may be the exact functions assigned to foremen and superintendents, there is no question that the cooperation and support of these line officials is essential to the full success of representation. Some of the earlier representation plans were put into effect with little regard to the opinions and prejudices of the first- and second-line supervision. The thing that

looked important was to establish direct connections between the top executives and the rank and file of the workers. The result was friction and misunderstanding, with perfunctory support or none at all by the foremen and superintendents. With better understanding of labor management and industrial psychology, managers now make earnest efforts to enlist the support of the line officials before launching representation plans or other innovations of labor policy.

In one company that has had outstanding success in administering representation the manager of industrial relations always visits a plant before a representation plan is installed and spends two or three weeks, if necessary, in explaining the idea to foremen and superintendents, answering their questions and objections and making sure that they are in accord with the labor policies of the management. It is important also to secure the support of inspectors, time-study men, safety engineers, and others whose duties bring them into direct contact with labor.

Functions of Personnel Department. Almost always the routine administration of a representation plan is a responsibility of the local or general industrial relations department of the company. Within the plant the personnel director usually arranges meetings, confers with representatives, and takes responsibility for following up suggestions and complaints and making sure that decisions are rendered and transmitted promptly. Sometimes he serves as chairman or secretary of some or all of the joint bodies constituted under the plan. He may have a place in the line of appeal open to an unsatisfied complainant or he may represent the plant manager in hearing cases on appeal. Nearly always he finds it necessary to prompt the operating officials, explain their functions under the representation plan, and make sure that these functions are not overlooked in the press for production. Likewise he generally has to instruct the employee representatives, guide them in carrying out their duties, and interpret to them the policies and decisions of the management. Often he finds it advantageous to prepare programs for committee and conference meetings, select officials to address the representatives, assign their topics, and sometimes write their speeches.

The degree of prominence which the local personnel man will assume in the administration of the representation plan will depend largely upon his personality and upon the personalities and ideas of the executives to whom he reports. In some plants the industrial relations director functions as the mouthpiece of the company and serves as the principal point of contact between employees and management. In others he remains in the background, works behind the scenes, and secures results just as effectively as if he were always in the center of the stage.

In a company having several plants there is usually a central industrial relations department serving the managing executives in a staff capacity. This industrial relations department usually maintains a general advisory supervision over the representation plan, follows up complaints that are not adjusted promptly in the plants in which they arise, and consults with the operating officials on matters of general labor policy. Ordinarily the director of industrial relations visits the different plants, attends conferences as often as convenient, and confers with representatives, superintendents and foremen.

As administrator and interpreter of all the labor policies of the company, the director of personnel usually has the responsibility for adjusting representation to whatever other plans are in effect, and maintaining harmony between the various parts of the entire industrial relations system. This is a function of prime importance. Employee representation is not the whole of a labor policy. It is only a part of it and needs to operate smoothly and efficiently with all the other parts.

Chairmanship of Conferences and Committees. In some companies the ranking line executive, usually the plant manager, presides at general joint conferences and an official is likely to be chairman of each joint committee. In other companies chairmen elected by and from among the employee representatives serve as presiding officers. In still others, the general or local industrial relations directors preside at meetings. There is no uniformity of usage in this respect; almost every imaginable method of assigning chairmanships may be found working successfully in some company or plant.

Probably the majority opinion inclines toward the chairmanship of the ranking company executive, and usually this arrangement is not resented by the employees. If the plant manager or other high official serves as chairman, however, he needs to guard against assumption of too much authority and the discouragement of free speech on the part of the employees and his subordinates in the official organization. A chairman with official prestige and dominating personality is under constant temptation to "talk down" his opponents and settle questions autocratically. Too much domination by officials is one cause of the indifferent success of some representation plans.

Preparation and Distribution of Reports. Usually the joint conference and each standing committee chooses its own secretary, who is likely to be an employee representative. The principal duty of this secretary is to prepare minutes of meetings and other reports for distribution to employee representatives and officials. Frequently it is advisable for the management to give the elected secretary some assistance, or even to have reports written for him and submitted for his approval and signature. Care should be taken not to ignore or supersede the secretary, especially if he is an employee representative. In every case he should be given an opportunity to read, correct, and sign the minutes before they are distributed.

Minutes should be neither too "sketchy" nor too verbose. Verbatim reports of discussions generally are to be avoided. Debates and decisions should be reported fairly and without appearance of prejudice. Especially if the minutes are prepared by the management, care should be taken to state the employees' side of each case fully and avoid giving the impression that the management always was able to persuade the employees that it was right. On the other hand, the secretary should not unduly cater to the political type of employee representative, who constantly shoves himself forward and seeks to make himself a hero or a martyr.

Much variation is found in the methods of distributing conference and committee minutes. Sometimes these reports are widely disseminated through the plant, posted on bulletin boards and otherwise made available to all the employees. Sometimes they are furnished only to officials or to officials and employee representatives. Sometimes they are published in full in plant magazines or in pamphlets for general distribution.

A fairly wide distribution of at least the minutes of general joint conferences is desirable, since these reports contain, or should contain, most of the information which employees ought to have about the functioning of the representation plan.

Minutes usually are sent to plant and general executives of the company and to local and central personnel departments. This is important as a means of following up complaints, expediting decisions, and maintaining executive supervision over the operation of the plan.

Company Information for Employees. One of the main purposes of representation is to provide a means of furnishing company information to employees. Recent years have seen a striking change in the attitude of management on this point. Formerly much of the vital information relating to company business was looked upon as a sort of sacred mystery, to be discussed only in directors' meetings or at conferences of executives. In some companies this attitude still prevails. Among modern-minded managers, however, there has grown up a constantly increasing tendency to share facts freely with employees, with stockholders, and with the public at large.

This tendency is particularly impressive in the case of employees. Many managers make a practice of discussing freely with employee representatives such intimate topics as costs and earnings, outlook for future business, prospects of steady or irregular work, possibilities of building up or reducing the working force, and all sorts of things that are of mutual interest to the employees and the company. Sometimes cost sheets are taken into joint conferences and explained in detail to representatives and foremen. In a number of companies each annual report is summarized and explained by competent officials who attend conferences for that purpose.

This spreading of company information among the employees may be extremely useful in building up confidence, establishing loyalty, and preventing misunderstandings and the spread of irresponsible gossip. It is such an important element in the administration of a representation plan that it may almost be said that a company which does not wish to make information available quite freely to its employees will be better off without representation.

Naturally it should not be understood that a representation plan is the only method of furnishing company information to employees. Bulletin-board publicity, plant newspapers and magazines, mass meetings, educational conferences, and numerous other devices have been used successfully for the same purpose. It would appear, however, that employee representation, by affording frequent contacts between the officials and selected representatives of the employees, is the best means thus far devised for providing a double-track channel of communication between management and working forces.

Following Up Questions Raised in Conferences. In a large company with several plants and numerous departments, there is need for a close follow-up of the questions raised in joint conferences or committees. This is particularly important in the case of complaints presented by employees. However good may be the intentions of the management, there is danger that some question vitally important at least to the man who raised it will be referred to a committee or a department head and then overlooked until it becomes a cause of

friction and misunderstanding. It is important that decisions of the management should be fair and equitable, but it is almost equally important that they be rendered promptly.

The follow-up of cases arising in a representation plan usually is a duty of the local or company personnel manager. He should receive reports of all meetings and should keep a record of all unfinished cases. If there are indications that an official is unduly delaying decision on a question that has been referred to him, he should be reminded of the case, repeatedly if necessary, and urged to get it cleared up. It is highly undesirable to have a question, especially if raised by employee representatives, reported as unfinished business at repeated meetings of a works council. If the management has a legitimate reason for delaying a decision, this reason should be fully explained to employee representatives.

Selection and Development of Representatives. Types of representatives elected by employees are likely to show as wide a variation as is found among candidates chosen under any other elective system. In almost any works council the elected representatives are likely to include some who are radical and some who are too conservative; some who are belligerent and some who always agree with the management; some who play politics and some who are elected against their will and wish they were not there; some who try to monopolize the center of the stage and some who can rarely be induced to say anything; some who are mentally keen, some who are about up to the intellectual average of the working force, and some who are simply stupid.

In the selection of representatives the management properly can exert little or no influence beyond urging employees to participate in elections and to vote for the men they think will best represent them. To bring managerial pressure to bear for or against a particular candidate threatens the integrity of the whole representation plan and is almost certain to destroy employee confidence.

However, the management can, and properly may, instruct the elected representatives in their duties and seek to develop their capacity to perform them. In some plants the personnel manager confers with all newly elected representatives, explains the representation plan and their rights and duties under it, and tries to get them started on the job with an adequate understanding of what it is all about. In other companies the first joint conference after an election is taken up largely with a discussion of the representation plan and the instruction of both employee and management representatives in their duties. Handbooks of information sometimes are used for a similar purpose.

Many representation agreements contain guarantees that employee representatives shall not suffer discrimination on account of their activities in behalf of their fellow workers. This immunity, whether or not it is written into the representation plan, should be scrupulously protected. There is no greater farce than a works council in which the elected delegates are afraid to talk freely lest they "get in bad" with the management. Wise managers generally have leaned over backward in permitting the utmost freedom of speech. One company president's statement in a joint conference that "nobody's going to get fired for shooting off his mouth," is rather character-

istic of the attitude of forward-looking executives. The writer recalls one representative whose queries and retorts to the highest officers of the company sometimes became positive insults. He held his job, retained the respect of the management, and ultimately was made personnel director of a large factory.

There is danger, however, that some officials, especially in the subordinate ranks, will try to make things disagreeable for representatives who become too zealous in promoting causes that are displeasing to the management. This danger should be guarded against at whatever cost. Evidence, or even well-grounded suspicion, that activity on the part of a representative militates against his standing in the shop is sufficient to nullify any good results that otherwise might be gained through representation.

Radicals and Conservatives. Among a body of workingmen there is likely to be a sprinkling of radicals who look with disfavor upon the existing economic order and who are suspicious of everything originating with the employer. Men of this type, if they happen to have the elements of popularity, are likely to be elected to the works council. Often that is the best place for them. In employee relationships, as in politics, the best treatment for a radical is likely to be that of putting him in a position of responsibility. The history of employee representation contains numerous instances of radicals and "trouble makers" who have developed into the most reasonable and most intelligent of employee representatives. It is only fair to add that there are some other instances in which radicals have proven to be insincere and throughout their careers as representatives have played to the gallery and attempted to take unfair advantage of their positions. The latter class, however, are in the minority.

Dealing with a radical representative, especially in the early stages of his service, calls for tact and good judgment on the part of the manager. Usually this representative is intelligent but inadequately informed. If he shows indications of honesty and sincerity, it is worth while to take whatever time is necessary in presenting the facts and explaining the company's point of view. If he wants to talk in meetings he should not be shut off—at least not until it has been demonstrated that he is playing politics. Often it is well to appoint him to important places on committees and to entrust him with difficult duties in order that he may get a taste of responsibility.

Perhaps even more difficult to deal with than the radical is the representative who is too compliant, who always agrees with the management, and who never is willing to make a fight in behalf of his constituents. This representative is likely to serve only one term. During that term the manager should seek to stiffen his backbone and to show him that he was elected really to represent his fellow workers. A representative who is merely a "yes" man for the management is as useless to the company as he is to his constituents.

Women as Representatives. Most plans permit the election of women as representatives, and some of them prescribe a definite apportionment of representation between men and women employees. In shops where the majority of the employees are women, and where freedom of choice is unrestricted, most of the elected delegates may be women—or, on the other hand, they may not. Feminine psychology in the factory is no less baffling, from the

viewpoint of the masculine observer, than it is anywhere else. One group of women workers may elect as their representative one of their own number who has natural traits of leadership and all the qualifications for effective service. A similar group may persist in choosing any man who happens to be available, however much his ability and temperament may unfit him for the position.

Women representatives have served in works councils with varying degrees of success. A few have been conspicuous leaders, looked up to by wage earners of both sexes. Some have been indifferent and disinterested. Perhaps the majority sitting in mixed assemblages have been unduly inclined to take the back seats and to yield to their masculine colleagues the places of leadership in representing the working forces. It is to be expected that the skill of women representatives, and the value of their services to their fellow employees, will improve with experience. Certainly their selection should be encouraged in shops where the majority of the workers are women.

Promotion of Representatives. An important by-product of employee representation is the uncovering of raw material for supervisory and executive positions. In some companies a large proportion of the foremen have served as employee representatives before their promotion from the ranks. Often a worker has qualities of leadership which would be discovered late, or not at all, except for the opportunities presented through the works council. Naturally experience as an employee representative is valuable to the worker who later is elevated to supervisory rank.

In selecting men for promotion, the management should avoid discrimination, either favorable or unfavorable, toward employee representatives. There should be no appearance of getting rid of a troublesome representative, or buying his favor, by advancing him to a foremanship. On the other hand, service in the works council should not prevent or delay a worker's promotion.

For the worker who has qualities of leadership, but who lacks training, experience, or some other element requisite for a supervisory position, representation often provides an outlet and an opportunity for service. Sometimes an employee representative of this type is a powerful harmonizing influence, and accomplishes more in promoting satisfactory industrial relations than almost anyone else in the factory.

Full-time Representatives. Occasionally, either by the terms of a representation plan or through local custom, the employees of a factory or a department have a full-time representative, who does no manual labor and who devotes all his attention to representation duties. Usually a representative of this kind is paid by the company and receives compensation approximately equal to what he would earn at his regular occupation. While occasional instances may be cited in which these representatives function usefully and without cause for criticism, the practice generally is not to be encouraged, and its justification in a particular company requires affirmative evidence that there is need for a full-time spokesman for the working force.

Constructive Cooperation. Employee representation originated largely as a method of securing justice and preventing friction between employers and employees. That purpose is still vital and should by no means be overlooked. In recent years, however, it has been found that the adjustment of grievances

and the elimination of misunderstanding is only a part of the service which may be rendered by a representation plan. There is a whole field of constructive cooperation on such subjects as efficiency, economy, elimination of waste, accident prevention, and the promotion of company prosperity. Some companies which have taken full advantage of the opportunities in this field have achieved results of outstanding value.

In the early stages of nearly every representation plan conferences and committee meetings are taken up largely with the presentation, discussion and adjustment of grievances. Usually there is a dammed-up reservoir of complaints which descends in a flood as soon as representation provides the opportunity. As time passes, however, these accumulated grievances are adjusted and new ones are taken care of currently, usually by the foremen. Eventually a stage is reached at which seemingly there is little for the representatives to do.

This stage marks a critical period in the development of representation. There is danger that meetings will become routine and perfunctory and that employees and officials will lose interest. One or two companies have even reported that their representation plans were abandoned because there were no grievances and therefore nothing for the conferences to do.

It is at this point that the efforts of the representatives may be turned into constructive channels. The initiative generally must be taken by the management, but in most cases the employees will be found interested and receptive. A waste elimination campaign, for example, may be put on through cooperation of representatives and foremen. Joint committees may be appointed to inspect products for quality or to promote safe working practices. There is no limit to the fields that may be entered—and actually have been entered by some companies—in this type of constructive cooperation.

Periodic Audit of Results. In everything that has been written in this chapter stress has been laid upon the importance of executive supervision. It has been brought out repeatedly that a representation plan will not run itself and that it needs constant guidance by responsible officials. It remains to be added that the effectiveness of this guidance and the degree of success that is being secured may be determined through periodic audits of the representation plan. These audits may be made either by company officials—for example, directors of industrial relations—or by outside consultants in whom the management has confidence.

An audit preferably should be made at least once a year. It should be conducted so as to determine what were the original objectives in introducing the representation plan and to what extent, if at all, these objectives have been modified; to what degree the objectives are being attained; what, if any, unexpected results, good or bad, have grown out of representation; whether the number of grievances is increasing or decreasing, whether any grievances remain unadjusted, and what proportion of them are settled by the foremen at the points of origin; whether representation is gaining or losing the confidence of employees, foremen and executives; whether decisions are given fairly and promptly by officials and joint committees; what type of employees are elected as representatives and whether this type is improving

or deteriorating; what changes in the plan or in its administration would be desirable in the light of experience.

The results of each audit should be carefully checked up by the personnel organization and brought to the attention of the responsible company executives. Errors or abuses that are disclosed should be corrected promptly. Suggestions for changes or improvements should be given adequate consideration, and adopted if they seem practicable and desirable. By this means the company management can do much to keep its representation system functioning with maximum efficiency and usefulness.

CHAPTER XIII

LABOR LAW IN THE UNITED STATES¹

By GLENN A. BOWERS, *Industrial Relations Counselors, Inc.*

Labor law in the United States, both statutory and common law, manifests itself in the acts of the legislatures, the rulings of the courts, and in the conduct of executives and the administrative units created by Congress and state legislatures. The keystone of this group is the legislature responsive to the people. When substantial sections of the people want to establish a standard, or get protection or preference which cannot be achieved through their own efforts, a demand arises for a law. If the demand is reasonable and particularly if it is supported by a potential block of voters, a new statute is enacted. Thousands of such enactments have come from Congress and the state legislatures principally during the past sixty years, and each year several hundred bills are up for consideration.

Numerous as are the labor laws, they cannot, however, set down specific rules for all issues which may arise in industrial relations. Cases come into court for which there is no direct precedent or in which newly developed circumstances require variation from previous rulings. The court, unable to wait for the instructions of the legislature through a new law, may be forced to fill in a gap in the law in making its decision. Thus the cry against judge-made law is raised. This is a particularly characteristic reaction to the granting of injunctions in labor disputes.

Finally the labor departments, factory inspection services, accident compensation boards, and other related administrative agencies are vital factors in the law of industrial relations. Their importance rests upon their responsibility for law enforcement. Weakness in these departments tends to nullify the statutes and thwart the will of the people as expressed by the legislatures.

Kinds of Labor Laws. There are broadly three kinds of labor laws; those which restrict or forbid, those which require, and those which permit a practice or condition. In the first category are laws which restrict immigration, child labor, hours of work, and prohibit the use of poisonous materials. The second class includes laws requiring the safeguarding of equipment, the maintenance of sanitary conditions; those specifying the method and medium of wage payment; and other measures for the physical protection of the worker. The third group of laws extend the privilege of choice, such as laws providing for voluntary arbitration, the incorporation of trade unions, and for the formation

¹ This is a major extract from a paper presented at The Institute of Public Affairs, University of Virginia, Aug. 6, 1930.

of benefit associations, labor unions, and cooperatives. Many labor laws cross the boundaries of this classification. It may be said that all compulsory laws permit the choice of refusing to operate at all under the conditions laid down, or that all restrictive laws are prohibitions to some extent.

A more useful classification would seem to be one which makes a distinction in the subject matter of the legislation. Thus, the labor market, the employment contract, working conditions, and collective bargaining constitute the main divisions, although enactments for the special interest of selected groups and for the broad general interest of all working people must be included to complete the picture.

The Labor Market. The earliest of laws relating to the labor market—unless the slave trade laws be included in this category—were probably those of the early sixties restricting the system of contract labor, prohibiting coolie trade, and legalizing, under a brief-term Federal Statute (1864 to 1868) the importation of indentured servants. Beginning with the Act of 1882, subsequent laws were enacted further to restrict immigration by excluding certain classes of undesirables, these culminating in the quota limitation acts of 1921 and 1924.

Other legislation affecting labor supply includes that which regulates the use of prison labor, limits hours of work, and forbids women and children to work at certain occupations or at night work. Laws relating to women and children, however, are usually referred to in connection with restrictions to the labor contract rather than with the supply of labor.

In the present century there has been added to this group of laws on the labor market statutes which provide for public employment bureaus, both state and Federal. There are some 250 public employment offices in the United States today.

The Employment Contract. Public regulation of the employment contract involves issues which are more controversial than the limitation or adjustment of labor supply. Here one encounters the *limitation of hours and working periods*, the *fixing of minimum wage rates*, and *compensation for employment hazards*. In exercising or attempting to exercise control over these terms of employment, public authority runs directly into the principle of individual liberty. Freedom of contract has been looked upon as a fundamental right and so it is as a general principle. A superior interest—the well-being of the public—may, however, make itself felt through the exercise of the police power. It is on this ground that the legislatures have in a large number of cases interfered with the general rights of employers and workers to agree upon the terms of their relationship. Were it not for certain constitutional safeguards, however, the continued application and extension of the police power would eventually result in dominant state control of employment relations, for in this field it has often been reasoned that the public interest is primary. These safeguards in the Constitution place a check upon the use of the police power and thus permit of a method other than state control to attain the elusive social welfare. Freedom of contract, while concededly subject to certain restrictions under the police power, is yet preserved by judicial interpretation of constitutional rights of the person and of property. By applying the rule of reasonableness to questionable statutes, the courts

slowly but surely reflect the changing requirements and public attitudes of our industrial order. Thus the Supreme Court of the land has endorsed the constitutionality of a law which fixes the maximum hours of a working day for all persons in mills, factories, and manufacturing establishments. Twenty-seven states now have such laws applying generally to manufacturing industries or to special industries or occupations. Every state has laws limiting hours of work for children under sixteen years, and all but five states have legislation of this character for women workers.

Other legislative limitations on working periods include Sunday labor, one-day-rest-in-seven, night work for women and children, daily rest periods, and legal holidays. In total this limitation on the work contract is widespread and extensive although of varied application in the several states. It should be noted that the federal Adamson law fixing the eight-hour day for railroad workers rests upon commerce powers rather than on the police power.

The second important interference with the employment contract is that group of laws which *specify conditions of wage payment* or fix minimum wage rates. State regulation of the time of payment, medium of payment, payroll deductions, and security of payment of wages has become so common and generally observed, that its existence is often forgotten. On the other hand, minimum wage laws have been applied successfully in the United States only to minors. Some sixteen states, since the passage of the first minimum wage law in Massachusetts in 1912, have adopted laws of this character for women and children. These statutes, however, have been stripped of their compulsory character, as applied to women, by the federal Supreme Court in the case of *Adkins v. Children's Hospital*.

Finally, as regards the employment contract, during the past two decades a trend has developed toward the *compensation of employees for certain hazards of employment*. Such compensations when required by law becomes as definitely a part of the employment contract as an agreement for wages in contemplation of work performance. Accident compensation laws now exist in all but four states: Arkansas, Florida, Mississippi, and South Carolina, in which states employer's liability acts, however, have removed the old common-law employer defenses in suits for damage. A few years ago agitation for state health insurance arose, but quickly subsided in favor of coverage of this hazard by voluntary private insurance developed on a group basis. More recently a demand has arisen for state unemployment insurance, a score of states having considered bills in legislatures. Also since 1915 fifteen states have adopted old age pension laws, but these being in the nature of public outdoor poor relief and not requiring industrial contributions, except through taxes, are not strictly within the field of labor legislation. Nearly all states provide pensions for mothers of needy children. Thus, except for an almost universal prevalence of compulsory accident compensation, the movement in the United States for state social insurance does not yet have an incidence directly upon industry.

Working Conditions. Working conditions, the third of the present divisions of labor legislation in the United States, includes statutes requiring safety equipment, those for the prevention of occupational diseases, and for the maintenance of sanitary conditions. The statutory requirements of

safety appliances, fire protection, wash rooms, freedom from poisonous gases and materials are widespread and among all labor legislation are now the most generally endorsed.

Collective Bargaining. Collective bargaining statutes, the fourth division, naturally arouse intense feelings among employer and employee groups. Each new legislative act is bitterly contested and usually carried promptly to the highest courts for interpretation. Both sides have ordinarily wanted the Governmental referee to make as few rules as possible and usually prefer to have the contest between them settled on economic grounds. But occasionally, either side may run to cover and demand special legislative protection as the employers did in a score of states at the end of the World War in urging and securing the adoption of laws against syndicalism and radical doctrines and as the trade unions have been trying to do for many years in advocating laws to curb the use of the injunction in labor disputes.

On the whole, there has been relatively little governmental interference with collective bargaining in industry of this country. Laws protecting the union label exist in the majority of states; blacklisting is forbidden in twenty-four states; picketing is protected under laws of nine states and within Federal jurisdiction but forbidden by statutes of three other states and one territory; interference with employment relations is forbidden in more than half of the states; while sabotage, industrial police and bribery are variously legislated upon. Notwithstanding this array of specialized statutes, the law of collective bargaining is still largely determined by constitutional provisions under interpretation by the courts.

In brief, the federal and state governments under existing interpretations of the Supreme Court of the United States, may not destroy, by statute or otherwise, the basic freedom of the individual worker to contract at will with an employer or vice versa, for to do so would be a violation not only of his liberty, but of his property right. The conditions of work under such contract may under certain circumstances be regulated.

This portion of our labor law that is relative to collective bargaining and joint relationships is especially complicated by the responsibility of the courts to examine in each case the fundamental character of the employer-employee activities involved, or of the contested statute which undertakes to regulate them. Needless to say, there are many points here as in other branches of labor law which yet remain vague and uncertain. It may be that new circumstances will cause even the Supreme Court of the United States to abandon, as it has done in the past, some of its interpretations of constitutional liberties, but one may be assured that such shifts in position will be made slowly where at all.

Compulsory arbitration of labor disputes has not fared well in the United States. In employments vested with a strong public interest, such as railroads and public utilities, there is no question of the constitutionality of legislation requiring it. In the case of the Transportation Act of 1920 so much dissatisfaction developed among the employees and employers affected that the compulsory arbitration feature was withdrawn in favor of a voluntary provision. The Kansas Arbitration Act of 1920 was unconstitutional, insofar as it undertook to bring within its compulsory sections employments which

could not reasonably be regarded as being clothed with public interest. A step in the other direction, however, is taken by the Colorado law of 1921 which provides for compulsory investigation of industrial disputes, and by approval of a federal court, forbids strikes and lockouts pending the decision of the commission. This decision may be rejected by either party. While compulsory arbitration has not been popular, the voluntary services of the state are generally available through commissions or bureaus whose duties include investigation, conciliation, and arbitration of disputes. Thirty-six states and the Federal Government have statutes providing for these services in varying degree and manner.

Protection of Special Groups. Governmental protection of the interests of special groups, such as seamen, railroad employees, government employees, women and children, constitutes the fifth division of our outline of labor laws. The theory underlying this type of legislation is that members of these groups are in certain respects limited in their opportunities for full protection of their own interests by virtue of the nature of their employment, or, in the latter two classes, because of physical characteristics. Children, furthermore, are regarded as wards of the state. Detailed reference need not be made here to the regulations of working conditions for seamen under the La Follette Act of 1915, to the semipublic employment on railroads, nor to the status of government employees, both state and federal. Their unique positions as subject to Governmental regulation is generally acknowledged. Special attention, however, may be directed to the attempts of Congress to adopt federal child labor laws and a minimum wage law for women and minors.

Recognizing that control over the processes of production lies within the jurisdiction of states, Congress resorted to its commerce powers and passed an act in 1916 forbidding the interstate or foreign shipment of any goods produced by children under fourteen or by children between fourteen and sixteen years at night work. The federal Supreme Court regarded this use of commerce powers as a subterfuge and declared the law unconstitutional as in violation of the Tenth Amendment. Congress again attempted the same objects in 1919 by levying a tax on the products of child labor. But as in the previous case, the Supreme Court looked to the real intent of the act, which was to prohibit child labor, and again held that this class of labor legislation belongs solely to the states. Whereupon an amendment to the Constitution was submitted to the states for ratification. To date scarcely a half-dozen states have approved this amendment, while a larger number have voted its rejection.

The congressional attempt to fix minimum wage rates for women and minors acting through a wage board created by an Act of 1918 applied only to the District of Columbia, but if upheld would have given solid support to and paved the way for an extension of this type of legislation, which already existed in several states. As the act came before the Supreme Court, only its application to adult women was involved. In its decision, the court refused to recognize the right of Congress to deprive adult women of freedom to accept any wage offered to them.

These unsuccessful attempts at legislation for special groups illustrate not only the difficulties in the way of class legislation, but also two of the general constitutional safeguards of personal liberty.

Social Legislation. The sixth and final class of laws within the scope of this survey concerns large numbers of families who are economically insecure and whose sole support is industrial employment. These laws are of general application and are more properly labeled social legislation rather than labor legislation although they sometimes directly affect employment. Included here are the compulsory school attendance laws, mothers' pensions, old-age pensions, credit unions, cooperative, and mutual benefit societies. In the case of old-age pensions, the number of states with existing laws is small, but nearly all states provide pensions for mothers of needy children, while statutes bearing on cooperatives and mutual societies are quite extensive.

The administration of labor law falls upon various branches of the government. Chief among them are the departments of labor and industry which have been set up under diverse names and forms in practically all states. Factory inspection service, compensation commissions, bureaus of vocational education, are but typical of the special state administrative agencies in industrial relations. The federal Department of Labor, created for the first time in 1913 as a major department of the government with representation in the cabinet, has eight bureaus devoting attention to labor statistics, immigration, naturalization, child labor, women in industry, employment, conciliation, and industrial housing. Other federal agencies, although this list is not complete, include the safety division of the Bureau of Mines, Board of Vocational Education, and special commissions on industrial relations, immigration, employment, and unemployment.

Principle of Labor Legislation Established. Thus the mere enumeration of the kind of laws through which the Government functions in the field of industrial relations presents an imposing list. We have been so accustomed in the United States to the idea of voluntarism in our industrial life that the extent of prescribed action has escaped the attention of many of us. Seventy years ago there was but a handful of labor statutes. Fifty years ago there was no defined constitutional law of industrial relations. Only since 1900 and particularly since 1910, have the rights of employers and employees become clarified, and yet only partially so. But in this period of a half or three-quarters of a century the accretions of statutes and decisions which go to make up the law of labor have been growing steadily until today, the question so often voiced in the United States: Shall we have labor legislation or voluntary action in industry? has given way to another: What kind of labor laws shall we have and how far shall voluntary action in industry be limited?

Trends of Labor Legislation. It is a fair question to ask whether this undeniable trend toward governmental responsibility in industrial relations is leading us? To attempt a conclusive answer would be foolhardy. One or two road markers do, however, seem clearly to point the direction in which we are traveling. The first of these shows a preference for that kind of governmental activity which *keeps the leadership in industrial relations in the hands of those directly involved in production processes*; that which establishes through its laws and administrative services rules of conduct which tend to preserve the liberty of individuals and minorities within the terms of the constitution. Governmental activity of this type is antipaternalistic; it democratizes the forces of production and rests the responsibility for social discovery in an

industrial order directly upon the participants. Government, guarding the interests of the people as a whole, thus assumes the roles of a referee and of a service agent. A careful examination of the governmental action in industrial relations in the United States seems to reveal these primary characteristics.

The second sign post, that which points to the increasing establishment of labor standards, might appear to be contradictory to the one just mentioned, unless the distinction is recognized between laws which regulate working conditions and those which undertake to control human relationships. The bulk of legislation in the United States is in the former area. Furthermore, the range of its application is in the lowest order of industrial conditions. Complete or even approximate standardization of working conditions as a goal is generally abhorred in the United States, but viewpoints and legislative practice are unmistakably working toward the establishment of *minimum levels below which industry is not permitted to operate*. Labor of children under fourteen years, the safeguarding of dangerous machinery, and the prohibition of women working in underground mines are examples of such minimum standards. To permit these and other practices or conditions, it is forcibly argued, would tend to undermine the stability of the vast majority of industry. Many are the differences of opinion as to what these minimum standards should be but as to their utility and desirability in numerous circumstances there is relatively little dissent. Those who argue otherwise place themselves in a strategically weak position when the time comes for determination of the level at which the minimum requirements may be fixed.

Finally, there is the indicator that *social insurance against the hazards of industrial life* is already an established institution in the United States. With state accident compensation and mothers' pensions laws already well-nigh universal, with the state old age pension movement in full swing and with agitation of state unemployment insurance reaching the point of advocacy by the governor of a premier state, a potential candidate for the presidency of the United States, there can be no mistaking the course of social insurance in this country.

SECTION VI

GENERAL MANAGEMENT

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CHAPTER I

ORGANIZATION AND FUNCTIONS OF MANAGEMENT

DECENTRALIZED OPERATIONS AND RESPONSIBILITIES WITH COORDINATED CONTROL

BY DONALDSON BROWN, *Vice President, General Motors Corporation*

There is probably no subject relating to industrial management more important than this. Yet, very little has been written which deals with it in a comprehensive way. There is good reason for a hesitancy to lay down general rules. The problem involves theories of psychology on which there is no lack of authoritative references, but a practical application of such theories is circumscribed by the personal equation and peculiar circumstances in individual cases.

General Motors Corporation employs approximately \$1,300,000,000 of gross assets, something like 175,000 employes, and comprises a large number of separate and distinct operating divisions. Among these separate divisions are the car divisions, owned directly and embracing Buick, Cadillac and La Salle, Chevrolet, Oakland and Pontiac, and Oldsmobile, which are recognized as leaders or else among the largest automobile producers in their respective fields. The Fisher Body group supplying automobile bodies to the car divisions is owned and operated as a division of General Motors and, in itself, is one of the largest businesses in the United States. Also there are numerous divisions manufacturing parts and accessories for automobiles, each one a highly specialized business and, in most cases, selling product in competitive markets as well as to our own car divisions.

Obviously, such a condition renders it impossible for General Motors to have a centralized organization in the sense of functional responsibilities. Each one of its divisions, from the standpoint of administrative management, has a fully self-contained organization, with a general manager responsible over all of the usual functional activities, such as engineering, purchasing, production, and sales; and including financial control. Yet, as an institution, having to account to its stockholders for constructive progress, General Motors must justify its corporate existence. There must be a sound measure of centralized control so as to assure the proper coordination of its various activities and the ability to capitalize, to the maximum degree, the great advantages derived from its combined size and importance in the industrial world.

Similarity of Fundamental Principles of Management. It goes without saying that the experience of General Motors has only a limited application to most other businesses. Obviously, its problems differ materially from those

of a less diversified business whose directing management is in immediate contact with all operations. There is a similarity of fundamental principles, however, and a brief outline of our own experience may prove of use as introductory to further study.

The fundamental principles of management which are applicable to any industrial business today need mention in order to illustrate the adaptation of those principles in our own particular circumstances.

Initiative Must Be Encouraged by the Delegation of Authority. All of us have a full appreciation of the importance of promoting initiative and enthusiastic effort down the line of organization by the delegation of authority and placement of responsibility. The difficulty in executive management is not in recognizing the advantages of placing responsibilities, but rather in distinguishing where limitations should be placed in order to gain necessary coordination.

By responsibility we mean the exercise of prerogatives, either implied or specifically assigned to the jurisdiction of an individual. Accountability would be a better word, for the individual who delegates authority does not divest himself of responsibility. The clerk has responsibilities which are assigned to him; the shop foreman has responsibilities under the jurisdiction and guidance of the shop superintendent; the general sales manager is responsible for sales, but he is expected to delegate authority to those under him and to hold each responsible in the performance of his assigned duties. Each department is responsible for the work in which it is engaged, and the exercise of this responsibility is served best by the assignment of authority and jurisdiction down the line as far as the capacity of the personnel will permit. Yet, there is the full responsibility upon the department head, and in turn the general manager, while the president is responsible over the whole. *In the sense that each individual is responsible to some one superior, culminating through a series of lines of jurisdiction in the responsibility of the president himself, central control is absolutely essential* as governing every activity in business management. This kind of control might be called administrative control; and the proper assignment of duties and responsibilities down the line of organization, as administrative management.

Men are jealous of their prerogatives. In fact, business management today has no high position for the man who lacks the courage of his convictions and who brooks interference with the duties and responsibilities which he knows to be within his rights. Promotion goes to the man who shows ability to assume responsibilities a little beyond the defined duties of his position, and the development of personnel and esprit de corps results from the delegation of authority and responsibility. But every man charged with responsibility and vested with authority must be brought to realize that his function is tributary to the accomplishment of a central motive. To whatever degree this spirit can be engendered throughout the organization, to that degree the central motive itself becomes the controlling power. There is no occasion for resentment where the functional activities of an individual are guided in the direction of an ultimate purpose, the existence of which is made known and in the conception of which the responsibility is recognized as resting elsewhere.

Permanent Welfare of the Owners Is Central Motive in Business. Since business owes its existence to its owners, it is expected to operate for their benefit. This is not inconsistent with the broader ideals of service to the public, because it is only through service to the public that profits to the owners may be assured permanently. Thus there is just one central motive in industrial management, *i.e.*, the permanent welfare of the owners of the business. This central motive, or ultimate purpose, is served through the determination of what are known as policies. Such policies as it is possible to establish in clear-cut terms must be laid down for the guidance of the administrative management. Unfortunately, it is impossible to anticipate the character of all the varied problems that present themselves in management and to embrace them by a definite expression of policy. In cases where there is no concrete expression of policy the administrative management is none the less subservient to the policy viewpoint. Where doubt exists, those responsible for policies must be consulted and decisions of policy laid down.

The Need of Coordination. In the true sense "centralized control" refers to the central motive of management. It requires that the activity of all departments be controlled so that they coordinate with the needs of the business, and with the requirements of policy. One-man control applied in the sense that one man dictates as to details of management is destructive to ultimate progress. But one-man control is essential as applied in the sense that he has a full appreciation of policy and a comprehensive knowledge of what is going on, to the end that every activity is guided in the direction of an ultimate purpose. If there is a complete coordination, with full regard to the permanent welfare of the owners of the business, then it follows that centralized control exists.

Responsibility of Board of Directors to Represent the Stockholders. Most large businesses today are in the hands of corporations owned by scattered stockholders. The corporation has a board of directors. The directors, individually and collectively, have the responsibility to represent the interests of all of the stockholders; in other words, to see that centralized control exists. Usually the board is comprised partially of men actively engaged in other directions, who cannot be in sufficiently close touch to exercise direct action in the determination of policies. This brings about the designation of a sub-committee, usually called the executive committee, comprised of board members more closely identified with the business, to whom broad authority is often delegated by the board.

But the board of directors has, and cannot evade, the sole duty of representing the stockholders. To the extent that discretionary power is left in the hands of an executive committee, it requires confidence and faith in the breadth of view and ability of that subgroup to exercise the prime function. There can be no shifting of the ultimate responsibility.

Just as in the case of the board of directors, where it is proper that broad authority be delegated to a subcommittee, so it is proper and advantageous to the stockholders that authority be conferred upon the administrative management as far as it is possible, so long as there is assurance of a proper degree of coordination, and compliance with what may be required from the standpoint of policy.

Limitations upon Committee Management. The fact that the board of directors, or we will say the executive committee acting for it, has the unescapable responsibility of centralized control does not mean that there should be committee management. If the executive committee be composed of department heads, or men actively engaged in the administrative management, it is usually advantageous because of their intimate knowledge of the problems of the business. On the other hand, this circumstance makes it difficult at times to distinguish between those questions requiring executive committee action and those questions which, in the interest of individual initiative, had better be left to administrative control. It should be recognized that the function of any individual as a member of the executive committee is quite different from his function as an executive officer. Committee action is by majority vote; executive action is by individual choice. The executive may seek the counsel and advice of any number of men on a given problem, but the decision is his. It matters not the extent to which he accepts the judgment of others, the action is his own individual responsibility. There is much truth in the saying that "what is everybody's business is nobody's business," and there can be no doubt that where committee action is applied to problems of purely administrative management it is almost always bad.

Duties and Responsibilities of Executive Committee. Having noted the necessity of centralized control and the responsibility of the executive committee in this regard, it is well to consider how its function can be exercised with no unwholesome effect upon the other phases of the management problem. The following may be laid down as the basis upon which the duties and responsibilities of the executive committee may be defined:

1. There must be a knowledge of the characteristics of the business and an understanding of the degree to which coordination exists or may be made to prevail through the cooperative activity of departments, operating under individual responsibilities and distinct lines of authority. Knowledge of the business and the use of statistical analyses suitably designed are essential to serve this first requisite.

2. Wherever practicable, it is desirable to lay down a concrete policy as establishing the fundamental basis upon which the activity of any or all departments shall be predicated. This can be done only where it is possible to express a point of policy in clear terms capable of interpretation and proper application in the varied conditions that occur and with which the administrative management must contend.

3. In the many cases where it is impossible to lay down any general rules and yet where the question of policy is no less involved, it becomes necessary to deal with problems as they arise. In this there is always the danger of encroaching upon the sphere of administrative management, and it is of great importance to analyze the characteristics of the problem so that it can be dealt with from the policy standpoint.

4. The president is the chief administrative officer and the connecting link between policy and administrative control. It has been stated that so long as complete coordination exists there is no need for the imposition of any central authority. The president must distinguish clearly between questions of policy and questions of administrative control applying to problems as they arise, and one of the most important functions of his position is to see that there is no undue interference with the prerogatives of individuals in the

organization. Where there is any room for doubt as to what may be best for the welfare of the stockholders, he must secure from the executive committee an expression of policy. In all other respects, it is the president's duty to see that coordination exists just as far as it is possible, and at the same time that those down the line have all the latitude and authority that is warranted, with a full sense of responsibility, so that there will be the greatest possible enthusiasm and exercise of initiative throughout the organization.

5. In rare cases and under unusual circumstances, where it is impossible to draw the necessary distinction as to the line of policy, it may be justifiable for the executive committee to assume the responsibility of direct action in respect to matters of administrative character. This should be avoided, if possible, and always where such a course is necessary care should be taken to point out that the question of policy is involved and that it is impossible to secure a distinct separation of policy from questions of administrative responsibility admittedly included.

General Motors Type of Organization. In the case of the General Motors, the board of directors has two subcommittees; a finance committee responsible for general financial policies, and an executive committee responsible for operating policies.

The finance committee includes men of large affairs identified with banking and with big business, apart from General Motors, while the executive committee is composed of men giving all of their time to the affairs of General Motors. In a limited sense the executive committee is subject to the finance committee in that operations are dependent upon financial policies. At the same time, financial policies must be maintained so that operations will not be deprived of any legitimate development. Cooperation, as between these two committees, is furthered by the fact of common membership on the part of several individuals.

Obviously, it is humanly and physically impossible for the executive committee of General Motors to maintain the same kind of intimate contact with the details of its business as would be practicable in the case of a very much less diversified business. Still the responsibility to stockholders is exactly the same and the proper organization of control has been forced by absolute necessity. Otherwise, the business were better split up into various units with separate ownership, even at the sacrifice of the great advantages of the existing combination, so that the stockholders of each unit respectively could elect a board of directors capable of assuming the usual responsibilities. Let us examine, first, the general way in which the separate units of the corporation are constituted.

Separate, Self-contained Divisions. Each one of these operating units, known as divisions, is entirely self-contained, with a general manager and complete jurisdiction and responsibility established.

There is never any conflict of jurisdiction, with respect to capital invested. Where any given plant produces a component entering into the finished product of just one of our divisions, it is deemed proper, unless the manufacture is of a highly specialized character, that the investment in that plant and its operation be placed under the jurisdiction of the consuming division. Generally speaking, where the product of a given plant enters into the product of two or more of our divisions, it is deemed desirable to place the investment in such plant and the full responsibility for its operation under the jurisdiction of a

separately organized division. It is thus that our numerous parts and accessory divisions derive their separate entity.

Apart from certain distinct units embraced in the Fisher Body operations, we have a group of divisions manufacturing components and accessories, such as ignition systems, bearings, and gears. All of these divisions are selling product to our car divisions and also, almost without exception, sell product outside. In addition, we have what are called our household appliance divisions which manufacture such products as electric refrigerators, radios, farm lighting and power equipment, farm water systems, illuminating gas systems, electric fans, and small motors; and another group of divisions known as the aviation operations. Each of these three groups of divisions comes under the general guidance of a vice president of General Motors.

Pricing as Applied to Interdivisional Sales. The question of pricing product from one division to another is of great importance. Unless a true competitive situation is preserved, as to prices, there is no basis upon which the performance of the divisions can be measured. No division is required absolutely to purchase product from another division. In their interrelation they are encouraged to deal just as they would with outsiders. The independent purchaser that is buying product from any of our divisions is assured that prices to it are exactly in line with prices charged our own car divisions. Where there are no substantial sales outside, such as would establish a competitive basis, the buying division determines the competitive picture; at times partial requirements are actually purchased from outside sources so as to perfect the competitive situation.

In the Fisher Body group are included separate and distinct units supplying materials such as lumber, glass, hardware, etc., for body construction. The interrelation of these units with the final body manufacture is exactly the same as that between the other divisions which I have described.

There are five automobile divisions in General Motors operating in the United States, each occupying a position in a distinct price class in the industry. There is charged to each the total investment in plants and other assets over which it has complete jurisdiction.

In addition there is a separate division handling the assembly and sale of all cars in Canada; and an export group handling the sale of all cars in other foreign countries. This latter group has charge of manufacturing and assembly, as well, where cars are manufactured or assembled abroad.

Rate of Return on Capital as a Yardstick. The general test of efficiency of management of any business is the rate of return on capital employed. Capital in industry is entitled to a varying rate of return largely dependent upon competitive conditions in the broad sense and the hazard that is involved. Needless to say good will, that intangible and illusive, but none the less valuable, asset which every business seeks to enjoy, is of great importance. Apart from this, however, profit from industry is dependent upon the character of product supplies and the degree of protection afforded by patents of specialized knowledge and skill in processes and methods of manufacture and distribution. At the same time the rate of return on capital is affected directly by the control of investment in working capital items and fixed assets in relation to the volume of business. Capital employed in the

production and sale of a product that is bought on the basis of exact specifications, in the manufacture and distribution of which no highly specialized knowledge is required, contents itself with a relatively low rate of return. The production of an article that is exclusive in design, possessing superior engineering qualities and carrying with it a peculiar appeal to fashion or the taste of the public affords to capital the opportunity of enjoying a high rate of return. The hazard which always accompanies such a condition is minimized by the exercise of skill in progressive engineering improvements, and ingenuity in anticipating the changing tastes of the buying public. In gaging the effectiveness of management the first approach always is to examine the overall result—the rate of return enjoyed on capital employed. If this be subnormal, having due regard to the character of business and the competitive situation, it is self-evident that something is wrong. The second step is to identify the cause.

Gaging Overall Effectiveness of Management. With the segregation of General Motors into separate businesses of distinct classification we are in position to compare the performance of various divisions respectively with competition in the same line. Thus we can gage the overall effectiveness of management in each case. By the use of suitable statistics and contact with the management of the various divisions, the president of the corporation and central group executives are able to detect instances of faulty control and to bring about the correction of a recognized condition by way of intelligent suggestion. The executive committee is able to deal with operating policies in respect to any division with an understanding of the characteristics of the particular business and the position of the division in its field of competition. This type of organization as applied to big business lends assistance to a high degree of centralized control, while at the same time it affords an opportunity of fixing responsibilities upon the administrative management on a clear-cut basis upon which they can be held accountable for results.

As a general proposition, I should say that in any business of considerable size and diversification, capable of being subdivided into units having the characteristics which I have described as pertaining to General Motors' divisions, such segregation is deserving of the most serious consideration. If the advantages of such a type of organization are to be enjoyed fully, it is absolutely essential that each unit be constituted so that it represent a self-contained business enterprise. The capital placed under its jurisdiction must be identified definitely with its own business and no other; and prices at which its products are sold must be based upon actual competitive values. Otherwise there is no tangible basis upon which the general effectiveness of the direct management can be gaged reliably.

Decentralized Organization as Opposed to the Centralized Type. This scheme of organization is usually referred to as the decentralized type. Opposed to this is the centralized type of organization, made up of functional departments; with an executive in charge of all manufacturing operations, another in charge of all sales, and with central purchasing and engineering departments. As to any of these functional activities it is difficult for anyone not in constant contact to judge the efficiency of performance even though he might have a specialized knowledge of the particular type of activity. With

accurate accounting practices and painstaking analyses the manufacturing cost of a given component, or the complete product of manufacture, at times may be compared with the price at which a similar thing can be purchased elsewhere. However, it is very rare that a comparison can be had with the cost of manufacture elsewhere. Also it is impossible to arrive at a conclusive comparison of sales effectiveness and efficiency. Unrecognized inefficiency in manufacture may throw an impossible task upon a very efficient sales department. On the other hand an inefficient sales department may make it impossible to capitalize a highly economical manufactured product. In any event *general managership* is needed. This is essential, not only to gain proper coordination of functional activities, but from the standpoint of having some one in sufficiently close touch with details as to be competent to size up the effectiveness and efficiency of departmental management.

In the days of small business, corporations or privately owned businesses were managed by men who had a detailed knowledge of all the functional phases of the business. Department heads, and even those below had intimate contact with the general problems of the business, and gained knowledge in the essentials of general managership. The heads of many large corporations today had their early training in the atmosphere of the small business, and know from experience the character of problems which present themselves down the line and recognize the need and method of coordinating the various activities. In the sense in which I am using the phrase, there are still many small businesses. But a large share of the country's manufacturing business today is conducted by huge corporations, brought into being by force of economic developments and the opportunity of capitalizing the enormous advantages of large-scale operation. As applied to these there is a comparatively new problem of organization. That problem is to combine the economical advantages of modern business, with as little sacrifice as possible of that intimate control and development of managerial ability that is characteristic of the well managed small business.

Most of the divisions of General Motors are enormous in themselves, but separately they do not have the complication of products of highly diversified character or type. Operating as separate self-contained businesses, the divisions afford the advantages of concentrated management inherent in the small business. It has been pointed out that, apart from these advantages, this scheme of organization facilitates the exercise of centralized control from the policy standpoint in the case of a corporation constituted as General Motors is.

Corporation Policies and Interdivisional Relations. Apart from the coordination of activities within each operating division, there are questions of corporation policy having to do with interdivisional relations. There must be no undue conflict, competitively, between the product of one division and that of another. There are certain general policies which, if good for one division, are good for all divisions. There are other questions of policy which must be determined from the standpoint of the corporation as a whole, rather than from the standpoint of any single division.

Purchases of materials must be conducted in a way so that the full advantages may be enjoyed from the combined requirements of all divisions.

Engineering developments of fundamental character must be brought to light and the adaptability determined. Manufacturing methods and policies demonstrated to be advantageous in one place must be considered for adaptation under like conditions elsewhere. Similarly as to sales methods and policies. All products sold are advertised directly by the divisions respectively. However, General Motors advertises as an institution. The institutional advertising must be coordinated with the direct product advertising; and the integrity of the corporation's position must be preserved by making sure that the advertising is according to the facts, and in line with the policies of the corporation.

Interdivisional Relations Committees Are Not Administrative. Serving in the direction of crystallizing the important corporation policies and making them effective, and to facilitate the adaptation of engineering improvements and operating methods, there are various so-called interdivisional relations committees. They have suitable representation from the most important divisions, and are as follows: general purchasing committee, general technical committee, works managers committee, general sales committee, public relations committee, service committee, etc.

These committees meet separately at certain intervals. There is at least one member of the executive committee on each of these committees. The work of the committees clears through various central office staff organizations, maintained so as to perfect the flow of information back and forth and to facilitate the orderly consideration of common problems of important policy and procedure.

The purchasing committee deals with questions of general purchasing policy, but, by reason of the nature of the situation, it directs the actual purchasing arrangements in cases where it is found advantageous to centralize the purchases of materials common to two or more divisions. Such purchases usually are effected by a central staff organization headed by an executive who is secretary of the general purchasing committee. In all other cases, however, the interdivisional relations committees have no actual authority. They are not designed to function as administrative bodies, but rather as a means of providing an opportunity for general discussion of problems of common interest. No one is bound by the expression of opinion by others in meetings of these committees; there is no transfer of responsibility. Where there is a question at issue on the score of corporation policy the president of General Motors makes the decision or refers it to the executive committee for its determination. Cases of this kind are rare.

Substituting Facts for Opinions. As a fundamental requisite in the work of coordination, it should be remembered that the bringing of men's minds together in connection with a given problem can always be greatly facilitated through a presentation of the facts. Disagreements fade away in proportion to the degree to which facts may be substituted for opinion. So far as it is practicable the discussions in these committees are predicated upon the display of facts. Questions of policy are clarified; and through the operation of these several committees a means is provided of gaining a widely diffused knowledge and understanding of corporation policies, and a sympathetic compliance with them as they may bear upon the immediate problems of divisional management.

The head of each division should be qualified in every way to hold the position of president were its business owned and operated by an independent company. He has all the latitude and authority that normally would go with such a position, being limited only in the direction of policies such as properly would be dealt with by the board of directors or executive committee. In the actual situation such questions of policy are dealt with by the president of General Motors and group executives, facilitated through the operation of the various interdivisional relations committees, reference being had to the executive committee of the corporation when occasion requires.

ORGANIZATION AND OPERATING PRINCIPLES

BY EDGAR W. SMITH, *Assistant to President, General Motors Export Company*

Very definite principles of organization exist; they are common to all forms of activity which human beings collectively may undertake, whether political, social, military, religious or industrial in their nature, and they divide themselves into three major classifications: the scalar principle, the coordinative principle and the functional principle.

What we are concerned with is that a structure of organization arises out of a proper interpretation and application of these principles, and that this organization structure is put into our hands to utilize in an operating sense for the attainment of our established objectives. This paper aims to provide only a knowledge of what we have done in the General Motors Export Company in the way of creating an organization structure, and what we have attempted to do in the way of providing a set of operating principles for its effective and profitable use.

Use of Line-and-staff Principle of Operation. The General Motors Export Company is the division of the General Motors Corporation charged with the responsibility for distributing the corporation's products in all territories outside of the United States and Canada. It is, in fact, the consolidation of what would otherwise be the export departments of all of the corporation's car and truck manufacturing units, including the Chevrolet Motor Company, the Buick Motor Company, the Olds Motor Works, the Oakland Motor Car Company, the Cadillac Motor Car Company and the Yellow Truck and Coach Manufacturing Company. As late as 1926 the Export Company was composed of 13 different operating units; the total number of employees on the pay roll was 2,567; and sales volume was running at the rate of \$85,000,000 a year. In three years the company expanded to include a total of 22 self-contained, self-administered companies, operating nineteen assembly plants, five warehouses and three distributing organizations in 110 overseas markets; the personnel employed increased to over 19,000, and the sales volume in 1929 attained a figure of close to \$300,000,000. The program of expansion which resulted in these changes has been carried on, and is being carried on, through the medium of an organization which functions in strict accordance with the line-and-staff principle of operation. Adoption of this line-and-staff principle became inevitable with recognition of the potential size, diversity

and extent of the Export Company's business. It is peculiarly suited to the needs of such a business, and we believe sincerely that, without the strength and flexibility it has provided, our rapid growth in this short period could not have been attained.

This line-and-staff principle is not a principle of organization, but strictly a principle of operation: it is simply one of the ways—and the most effective way, I believe—in which the organization principles of delegation, coordination and division of duties can be molded to practical use in the attainment of the objectives which are being sought.

Planning a Line Attribute. The terms "line" and "staff" themselves have, very obviously, been borrowed directly from military parlance. A line officer performs actual operations, in the theatre of war most frequently, but also in the seclusion of a distant building at headquarters; and the operations he performs include both thinking and doing. The captain in an infantry regiment in France during the war was patently a line officer; so also was his regimental commander and his army commander and the commander-in-chief of the A. E. F. But—and this is a point not widely recognized—so also in fact was Gen. Peyton C. March, chief of staff of the United States Army, who sat at headquarters back in Washington. All of these officers thought and acted. They acted in the sense that they did things and exercised direct authority, but it in no wise affected their status as line officers that they should also have been obliged to think. Probably the chief element of confusion to an understanding of line and staff operations is that planning, as expressive of forward thinking, should somehow be considered exclusively as a staff attribute. A staff officer, as a matter of fact, does assist his line superior in the latter's thinking and planning. In the army, the staff officers attached to the chief of staff aid in the development of strategy and the provision of materials both of which enable the line officers—including factually the chief of staff—to carry on.

All Officers Both Line and Staff. The use of a staff is not, of course, confined to any single officer. An army commander has a staff, a corps commander has a staff, and a division commander likewise; and in the smaller units, down to the company, there are staff functions to be performed. In our organization, the general manager's staff exists in the persons of the functional department managers; these department managers themselves have certain assistants who act on frequent occasion in a staff capacity; our regional directors out in the field have their staffs, and, in the case of our managing director at each individual plant, his line lieutenants function in a staff capacity whenever they act with him as advisers and consultants. It is to be noted in this connection that no man in the organization—with the exception of the president—is either pure line or pure staff in the day-to-day conduct of his work, for staff officers execute very definite line functions in the administration of their own departments, and so typical a line officer as the general manager discharges staff responsibilities in his consulting and advisory contacts with the president. The president himself is pure line.

Possibly the simplest way of expressing the difference between line and staff attributes is to state that if the administrative head of an organisation has sufficient time and sufficient ability to study in detail and be thoroughly

familiar with all phases of the work for which he is responsible, he would not need a staff. Therefore, a staff organization can be looked upon first of all as a group of men who, at the direction of the administrative head, study and analyze problems and develop plans to the end that the administrative head may have before him the necessary facts and opinions upon which to base judgment and take action. A staff is something to lean on. This is its original meaning, from which we have arrived at the derivative sense of the term as we employ it.

The Operating Obligations. Before we attempt to apply the line and staff concept of operation in detail to our organization, it is desirable that we look first to what we may call the "operating obligations" of any industrial organization, including, of course, our own. These operating obligations are inherent in all management: existing with us originally in the president, they are delegated by him for actual pursuit and accomplishment to the general manager. In an organization of the scope and complexity of the General Motors Export Company it is necessary for the general manager in turn to delegate responsibility and authority in generous measure to his own subordinates in order to assure the attainment of his ends. It is important in this connection to note that these operating obligations again have no inherent identity with the line and staff principle of operation as such: *The line-and-staff principle of operation is simply the inevitable means that the general manager takes, in his obvious inability to do so personally, to secure the satisfactory discharge of his operating obligations.*

The operating obligations of the management are divisible very naturally under three distinct heads:

1. Planning.
2. Administration.
3. Results control.

The line-and-staff principle of operation permits the general manager primarily to delegate a large measure of the responsibility and authority for administration to his line officers in the field; it permits him, also primarily, to delegate a large measure of the responsibility for planning and results control to the staff officers by his side in New York. The authority and responsibility projected out to the line officers in the field is for all functions of operation in a restricted territory; the responsibility delegated to the staff officers in New York is for a single function of operation in all territories.

The Work of Administration. For purposes of logical development, let us discuss first the obligation of administration.

Our day-to-day business must go on. Cars must be sold and serviced; men must be hired and trained; materials must be flowed into the plants and along the assembly line and out to the distributors and dealers; the thousand and one things that happen daily and hourly must be done. No one man can do them all; no one man can even directly supervise their doing. Limitations of time, distance and human capacity determine these elemental facts. Twenty-eight individual operating units, such as those comprising the Export Company, would, even if they were located within the boundaries of a single state, be unwieldy of direct administration by a single man. The diffusion

of interest and attention among so great a number of points of operation would obviously be too considerable, and the problems involved too complex, to permit of satisfactory handling in this manner. It would be natural in the circumstances to combine the individual units into wieldy, less numerous sub-groups, and to put at the head of each sub-group a man to whom the general manager assigned the responsibility and delegated the authority necessary for its direct and competent administration. The operating units of the General Motors Export Company are not located in a single state; they are scattered over the face of the globe. This fact of their remoteness, from New York and from each other, lends additional emphasis to the necessities cited. It is for these reasons, then, and because it is desired to simplify the organization structure rather than to complicate it, that the office of regional director has been created. A regional director is placed in charge of each of the major territorial divisions throughout the world; one in Europe, one in South America, one in the Far East, and one in Australasia.

We are, therefore, brought to the first step in the definition of our organization chart: The general manager has delegated to the regional director, as line authority and responsibility, a large measure of the company's operating obligation having to do with administration, and the regional director accepts this authority and responsibility, for his particular block of territory, in all of its functional elements of management, sales, finance, manufacturing, and supply (see Fig. 1).

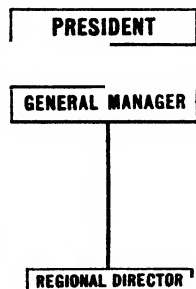


FIG. 1.

Planning and Results Control. Let us turn now to the other operating obligations of planning and results control.

By the same reasoning that goes to establish the impossibility of direct administration of all territories in the world from a single source, it is obvious that the planning, coordination and checking of results under their various primarily specialized aspects of sales, finance, manufacturing and supply, are equally a practical impossibility. The general manager finds it expedient and necessary in these circumstances to allocate the responsibility for doing the greater part of this work to a number of men, each of whom is charged with assisting and advising him in the particular field for which he has been chosen. The so-called "functions" of sales, finance, manufacturing, and supply are simply the logical and convenient avenues of specialization which have arbitrarily been determined upon; the word function itself has no particular operating significance beyond its meaning of specialized activity; management itself is a function; publicity, service, and inventory control are functions subordinated to certain others for ease of classification and government. Thus in discharging his operating obligations of planning, in so far as it applies to the elements of the business that have to do most closely with the sales activity, the general manager looks largely to the general sales manager for staff aid and counsel; he looks similarly to the general manufacturing manager for planning as it has to do with the functions of manufacturing; and

he looks to each of those officers, respectively, for staff aid and counsel in relevant matters pertaining to his own operating obligation of results control.

The next step in the organization chart, therefore, is to show the introduction of the four major functional staff heads in New York, as well as of one or more other staff officers, either functional or general, on all of whom the general manager leans for every necessary support (see Fig. 2).

We see, then, that a line officer—typically the general manager—is responsible for the three major operating obligations of planning, administration, and results control. Planning and results control he delegates largely on a functional basis, to his functional staff, the heads of the four departments of sales, finance, manufacturing, and supply; this delegation is one involving responsibility alone. The obligation of administration he delegates in a line sense, including both responsibility and authority, to his line officers in the field, the regional directors. The regional director is actually the representative of the home office in the field; he is, in one sense, a territorial general manager, who happens to be located out on the ground instead of being located somewhere down the corridor in the New York office. The virtue of the regional director's position rests, of course, in its consonance with our company's accepted policy of projecting authority out closer to the sphere of actual line operation; the test of the nature of his work is simply that he should do, in his particular field, what the general manager would do if, ubiquitously, he could be in each region.

This brings us to the next step in the construction of our organization plan.

The regional director, himself a line executive, inherits for his particular territory the same three major operating obligations of planning, administration, and results control, in all of their functional phases including management, sales, finance, manufacturing, and supply. He is, of course, responsible for the satisfactory discharge of his obligations in these respects directly to the general manager, and he receives his authority directly from the general manager; that is to say, there is no line of direct authority running down to him from any of the staff executives in New York, nor of responsibility running up to them from him.

In the discharge of his own operating obligations, the regional director, who has been placed in charge of a subgroup of individual operating units, looks to them in exactly the same way that the general manager has looked to him. There is the identical necessity, in only lesser degree, for delegation of authority and responsibility to the next stratum of organization beneath him; there is the identical requirement for the creation of more intimate administrative media and for the creation of more highly specialized planning and results control media; and there is the same opportunity and logic for utilization of the line-and-staff operating principle in the accomplishment of these ends.

In the same manner that the general manager delegated it to him, therefore, the regional director proceeds now to delegate to each of his individual managing directors the responsibility and authority for the administration of each of the particular operating units going to compose his region, under all of the major functional aspects of management, sales, finance, manufacturing, and supply. We show at this juncture the addition to the organization chart resulting from this development (See Fig. 3).

By the same cause that moved the general manager to proceed similarly, the regional director now delegates to staff officers he has appointed the responsibility of assisting him adequately in the discharge of his territorial operating obligations of planning and results control: to a regional sales

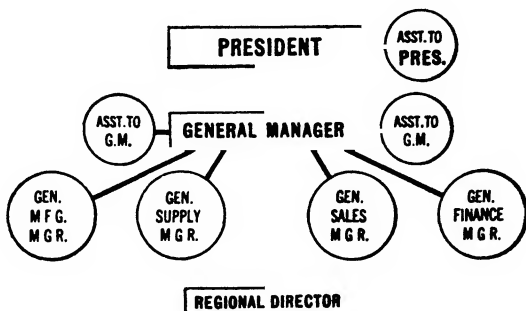


FIG. 2.

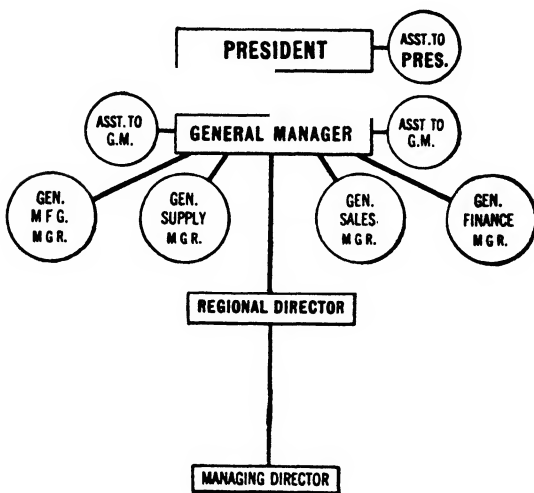


FIG. 3.

manager for the sales phases of this work, and to regional finance, production, and supply managers each for these respective functions. He may also, as did the general manager, have one or more general staff officers whose work is not functionalized; the assistant to the regional director is typically such an officer.

Our organization chart has now assumed these proportions (see Fig. 4).

The third stratum of the organization now finds the managing director, a line executive, possessed for his particular plant of the same three major operating obligations of planning, administration, and results control. The manner in which he carries out the discharge of these obligations is generally similar to that in which the general manager and the regional director carried out theirs before him: authority and responsibility are again necessarily delegated, this time to the officers in his own organization who are closer to the field and to the various functional responsibilities than he is himself. In one important respect, however, a difference exists: inasmuch as we have at last reached the ultimate field of operation—the very theatre of war—the

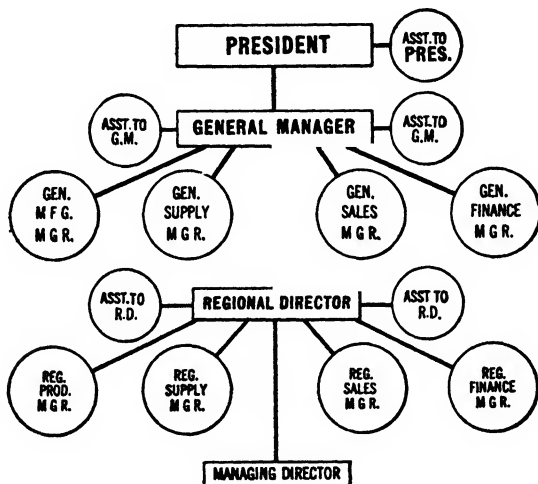


FIG. 4.

managing director finds it both feasible and desirable to delegate to his functional department heads, not only the responsibility for planning and results control, but also the authority for the exercise of this planning and results control and the authority as well for the administration of each respective function. The functional department heads at the plants, therefore, in contradistinction to the functional department heads in the region and in New York, are line officers. It is true that they discharge staff duties when they consult and advise with the managing director, but they are line officers essentially; the manager director's staff proper is composed of one or more assistants to the manager director.

The last step in the skeleton structure of our organization shows, therefore, the following set-up existing (see Fig. 5).

It would be possible to carry the organization chart down further still, and to show how the sales manager at a plant delegates his authority to zone

managers and fieldmen, and how in turn he fortifies himself with a staff of commercial vehicle experts, transportation engineers, and individual car-line specialists. It should suffice, however, to leave the organization structure at this point, below which, in any event, as will be seen, the contact from New York does not flow.

Before proceeding to a discussion of the lines of contact existing within this organization structure (other than the lines of direct authority made evident on the face of the chart), it will be interesting to look for a moment at a few of the essential factors in the broad descriptions that have been given to the line-and-staff offices portrayed. It was said in an earlier paragraph that no

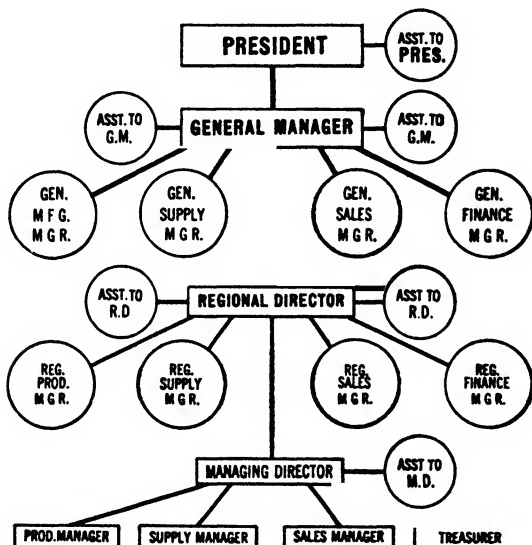


FIG. 5.

officer, other than the president, is either pure line or pure staff in the day-to-day conduct of his job. This is entirely true, but the fact in no way lessens the desirability of identifying an executive in the organization polity as either essentially line or essentially staff; a correct understanding of the relationships existing requires, in fact, that this be done. The general supply manager, for example, is essentially a staff officer in the place he holds in the polity of the organization as a whole, and this is true despite the fact that he performs, by himself or through his assistants, such obvious line duties as the movement of freight to seaboard: in such an instance he is, of course, acting in a line capacity with respect to his own subordinates, as all officers must.

The point is, of course, that a staff officer does issue line orders to his own departmental subordinates, but that he cannot issue orders, as a line officer

can, to the body of organization that lies in the various strata beneath him on the organization chart. In other words, a line officer exercises authority over all of the body of organization lying beneath him on the chart, whereas the influence exerted by a staff officer outside of his immediate department is, so far as it is authoritative, an authority of ideas. The staff officers are, in their functional capacities, responsible advisers to their respective line superiors, and advisers also to the corresponding staff officers in the subordinate organization strata, but any direct line instructions they may wish to see promulgated may be promulgated only back through their line of contact with their superiors and down thence to the line officers in the next subordinate stratum. It will be noted further along, however, that direct contact regularly exists between staff officers as, for example, between the general sales manager in New York and the regional sales manager in the field. This contact is not a line contact, nor an authority contact: it is a contact of an informational and advisory nature.

Again, before proceeding in detail with a definition of internal organization contacts, it is desirable to look a little more closely at the three major operating obligations of planning, administration, and results control, in order that a better understanding may exist of the nature of the contacts involved when we come to discuss them.

The element of administration, since it is purely of a line nature in its discharge, is deemed to be fairly obvious; it is the thing the plants, as the ultimate units, are doing day after day in the actual pursuit of their objectives. It may be worthwhile, however, to mention specifically one element of administration going somewhat beyond the obvious up-and-down exercise of authority: this is the element of coordination, which requires the establishment of adequate liaisons, interdepartmentally and intradepartmentally, for the smooth and efficient functioning of the business in all of its phases.

The elements of planning and results control, since responsibility for their attainment is delegated largely by the line officers to functional staffs, may well be gone into a little more fully.

Planning. This obligation, a line responsibility delegated largely to functional staff officers for pursuit, embraces the following major elements, which have the specific purpose of directly facilitating operations and improving results:

Formulating general strategy and originating specific programs.

Engineering new projects.

Developing or adapting new technical or manufacturing processes and assisting in their introduction and proper use.

Developing, elaborating, interpreting, and assisting in the digestion of suitable methods and practices; assuring that superseded or obsolete methods and practices are discontinued.

Analyzing existing forms of working organization and performance and recommending changes to improve results or to meet changed conditions.

Developing methods of personnel selection, training and appraisal, and assisting in their application; and, where desirable, carrying on special training work or the supply of special personnel.

Reporting to the immediate line superior on the suitability of specific plans to the purposes of the general plans that have been developed.

Maintaining adequate liaison with corresponding functional officers in other strata of the organization; keeping generally informed as to activities and developments in all strata of the organization.

Recognizing an advantageous policy or practice developed at one point, and making knowledge of it available at all other interested points.

Assuring finally that plans are properly interpreted and understood at the destinations for which they are intended.

Results Control. The delegated staff responsibilities under this line obligation have to do with the following up and scrutinizing of results being obtained, in order (1) to bring to light weak spots in organization, methods or personnel, so that necessary remedial action may be taken, and (2) to provide a basis for setting objectives and forecasting probable performance. More specifically, these responsibilities include:

Developing and recommending such procedures as are necessary properly to program or budget the work, and compiling, summarizing and analyzing information with respect to plans or budgets.

Reviewing, summarizing and analyzing appropriate reports, and bringing to the attention of the line superiors the pertinent facts they reveal.

Making such inspections and checking such data as are necessary to secure an adequate picture of the operating conditions and results; making these findings readily available, giving them proper interpretation, and recommending remedial measures.

Informational and Advisory Contact between Home Office and Region. With these major points indicated, in however brief detail, it is appropriate now that we pursue the examination of our organization chart further to see how, as the next essential, the structure we have portrayed is bound together with lines of contact and communication; how, in other words, the conduct of business and of operational procedure is designed to flow from the line and staff organization in New York through the line and staff organization in the region and to the line and staff organization in the ultimate field, and in the opposite direction as well.

According to the organization structure portrayed in the preceding chart, the only contact for the administration of the business and for the transmission of orders and instructions between the home office and the region is the one between the general manager and the regional director. Since everything in the nature of policies and plans is designed to clear through the general manager, it is obvious that the volume of material passing over his desk is likely soon to become so voluminous that he cannot cope with it. Requests from the field for further information on policies; suggestions of a relevant nature, and more or less detailed discussions of proposed moves, will all inevitably flow in from the regional director. All of the correspondence and contact involved is important, but certain of it is sure to be of relatively greater importance. The general manager is forced to the conclusion that distinction must be made between those things which he should or can afford to handle directly with the regional director, and those other things—largely distinguished as being of an advisory and informational nature, for the distinction is only partly on the score of relative importance—which can,

because of their relevance to a particular function as apart from their overall management significance, be most expeditiously handled directly between the department head in New York and the regional department head in the field.

The same situation in all of its elements applies as between the regional organization and the plant organization; and in certain instances also, mainly in those of a strictly routine nature, as between the New York department head and the corresponding department head at the plant itself.

Thus there arises on the organization chart a line of "informational and advisory contact" which runs between each department head, division head

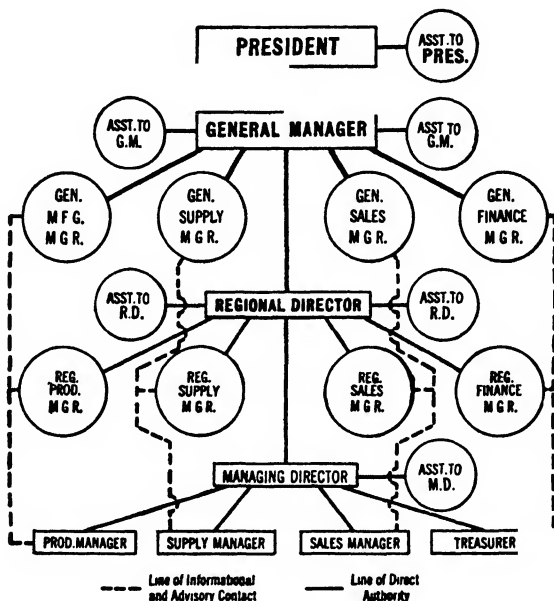


FIG. 6.

and section head and the corresponding department head, division head and section head in the other organization strata. For purposes of simplicity and ready identification, these lines of informational and advisory contact are shown in the chart only as they exist for the department heads themselves; they exist also, however, as between the head of the parts section in New York, for example, and the head of the parts section in the plant, or as between the regional advertising manager and the advertising manager in the plant (see Fig. 6).

These lines of informational and advisory contact have very naturally been set up in our organization structure to facilitate the flow of work and to

confine direct management contact to those matters which warrant management attention. There is created within the structure, in effect, a conception of three horizontal strata or physical groups—the home office, the regions, and the plants—held in relationship and alignment by a vertical tie of line responsibility and authority, and reinforced by four main vertical ties corresponding to the four major functions; or in other words what might be termed a line “organization of execution” and a staff “organization of ideas.”

Delegated Authority. There is one other line of contact to be indicated on our organization chart before it can be considered complete. This is the

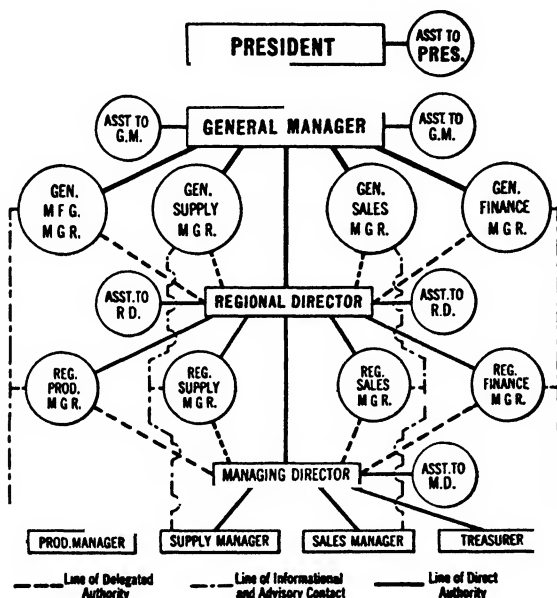


FIG. 7.

line of delegated authority—"specially delegated authority," it might more properly be called, since direct line authority itself exists by delegation—running from the New York staff heads to the regional director, and from the regional staff heads to the managing director. This delegated authority, to exist, requires specific designation, and it is exercised exceptionally and on special occasions, rather than as a matter of course. It must be recognized as a legitimate contact, however, and our completed organization chart, therefore, includes it (see Fig. 7).

Organization Structure Must Be Intelligently Used. An effort has been made in these recent paragraphs to define rather specifically the three types of contacts and relations which prevail between the various strata of our organi-

zation. They embrace, first, lines of direct authority; second, lines of informational and advisory contact; and, third, lines of specially delegated authority. The successful day-to-day operation of our business demands a great deal of common sense and good business judgment in the exercise of these contacts. A functional staff head needs clearly to appreciate the necessity for proper coordination, and he should, as a matter of working habit, handle through his superior and over his superior's signature those things which are of management aspect; he should clearly differentiate between matters of an advisory, informational, or routine nature which can be taken up directly by him with his corresponding functional head, and things of a management aspect which should go through his line superior. The staff head in the field should likewise appreciate his responsibility to deal up through his superior, rather than direct, on matters involving policy or having management significance. He should further appreciate his responsibility to keep his line superior currently informed as to activities he is undertaking or decisions which have been reached without the management's knowledge. The lines of informational and advisory contact have been provided, after all, to speed the tempo of our business and to make our organization more flexible and more effective in its functioning; it is important, therefore, that judgment and common sense be exercised in the practice of these contacts, for vitiation of their spirit and intent through carelessness or lack of discipline can have as its only consequence the exactly opposite result of conflict, inefficiency and confusion.

This paper has confined itself until now primarily to an exposition of the structure of the General Motors Export organization and the establishment of contacts to enable its proper functioning. The vehicle we have built for ourselves, however, can take on reality and become a vital and productive thing only through its intelligent and effective capitalization and use. The concepts involved must be sympathetically regarded and practised; each individual must understand and accept his own responsibilities and authority and the responsibilities and authority of those with whom he comes in contact; the implications of subordination and discipline which are involved must be rigidly adhered to.

In the delegation of authority contemplated by our line-and-staff structure, the very scope of our activities makes it imperative that the line officer who has fallen heir to the administrative responsibility be allowed to conduct his operations actively and in an unhampered manner. Thus a managing director, in the day-to-day conduct of his business, should be able to anticipate that his work will be interfered with only in the event of some drastic shortcoming in organization, methods or personnel making itself apparent in the results displayed. If such shortcomings become manifest, corrective action is, of course, necessary and to be expected; but with the business running in a generally satisfactory manner, it is the paradoxical fact that the regional director owes a responsibility to the managing director—and each line superior similarly to his subordinates—to respect the action the managing director is taking, to give him the utmost of his support in what he does, and to accord him the maximum of credit for it. No line superior who has a proper sense of his position can afford to interfere unduly with the work of

his subordinates; the fact that he has made them his subordinates and delegated a large measure of authority to them implies a faith and trust in them that carry very definite attributes of responsibility.

Relationship between Line and Staff. The other element of responsibility which does not show on the organization chart, but which is no less existent from its moral nature, is the responsibility that a line executive owes to his own staff executives and to the staff executives in the stratum of organization immediately above him. If the expression descriptive of a staff officer's authority—an "authority of ideas"—means anything at all, it means that the staff executives' plans and recommendations are entitled to the respect and consideration of the line executive. A very definite burden is, therefore, put upon the line executive who sees fit to disregard or to reject the counsel and help of his staff associates. Since the staff executives attached to the general manager are, in a sense, the vicars of the general manager, it is quite logical for the general manager to tell the regional director that respect for the recommendations of the New York staff executives is their due, and to let it be known that the support given to the regional director will be contingent in large measure upon the spirit with which the regional director himself cooperates with the general manager's staff.

It may assist in an appreciation of this point of view to set forth four cardinal principles which enter into a proper understanding of the relationship between line and staff, and the place, respectively, of line and staff in our organization structure. These principles may be briefly summarized as follows:

1. Line and staff are jointly responsible for performance.
2. A line officer discharges his responsibility by taking direct action; a staff officer discharges his responsibility by furnishing information and advice which he makes available to the line officer unselfishly and without thought of personal credit for the results accomplished.
3. Although staff executives are charged with responsibilities that have to do with internal administrative phases of the work in their own departments, this does not give them direct authority over the line forces in subordinate organization strata, nor does it relieve their line superiors of the basic responsibility for the results of their work.
4. The line recognizes the purpose and value of the staff and makes full use of its advice and assistance. In order that the line may properly do so, the staff must create for itself an authority of ideas, and must, by competence and tact, obtain and justify the line's confidence.

The opportunity to use this organization medium which has been made available to us depends, first upon an understanding of its principles; second upon possession of the wherewithal—satisfactory product, ample capital, adequate physical facilities and trained personnel—to move forward aggressively under these principles; and third upon the will and capacity to adhere to them, to subscribe wholeheartedly to their letter and spirit, and to do a good job well.

Summary. I have attempted to cover the reasoning underlying the creation of such an organization as ours, the structure and contacts of the organization itself, and the broad elements necessary for effective operation under its essential line-and-staff principles. To summarize as briefly as possible,

this organization plan involves a structure and a series of contacts conceived in accordance with line-and-staff principles of operation, under which the management is responsible for the three operating obligations of planning, administration, and results control; under which a large measure of responsibility and authority for administration in all of its functional aspects is delegated territorially to the line executives in the subordinate strata of the organization, and under which a large measure of responsibility for planning and results control is delegated functionally for all territories to immediate staff subordinates. Reference has been made consistently throughout this paper to the delegation of administration authority and responsibility to line officers in subordinate organization strata, and to the delegation of planning and results control responsibility to immediate staff assistants. This has been done, for purposes of simplicity, in a way generally that might indicate, except for the hints otherwise given, that they are the only forms of delegation existing. They are, in fact, the most important and distinguishing forms of delegation, but the picture is actually somewhat more complicated. The line executive in reality delegates to his line subordinate authority and responsibility not only for administration, but also for planning and results control, both as they relate to his particular territory, as witness the statement: "The regional director, himself a line executive, inherits for his particular territory the same three major operating obligations of planning, administration, and results control." Furthermore, the line executive delegates to his staff subordinates not only the responsibility for planning and results control, but the responsibility and authority as well for administration of the affairs of their respective departments.

This condition of parallel and coincident delegation has been referred to in the text only where it was believed that the reference would clarify and not confuse the major identifying issues involved. These major issues remain, as consistently cited throughout the paper, the delegation of administration responsibility and authority to line executives, and the delegation of planning and results control responsibilities to staff executives. The line-and-staff principle itself, to use the words previously employed, is simply the inevitable means the general manager takes, in his obvious inability to do so personally, to secure the satisfactory discharge of all three of his operating obligations of planning, administration, and results control. It is the means by which, as human beings, we are led naturally to pool our resources to get a job done quickly and well; in view of the size, diversity, and extent of our business, it is the only means we have found that will work successfully.

MANAGEMENT FROM A DISTANCE¹

BY DR. EDMOND LANDAUER, *Managing Director of Several Continental Textile Companies, Secretary International Committee on International Management Congresses*

Some months ago I sent a telegram from Brussels where I lived to the technical director of a Roumanian weaving mill which I manage. This

¹ Presented at the International Management Congress held at Paris, June, 1929
Translated by Edith King Donald.

telegram said: "Examine friction gear coupling Diesel motor cracked bolt." Some days later I received a letter from my director advising me that upon receipt of my telegram the friction of the coupling gears of the Diesel engine had been inspected and that one of the bolts tightening the jaws had indeed been found cracked. In ending the letter my director begged me to explain how I had been able, 1,615 miles away, to detect a small mishap which he, on the premises, had not been able to locate. I strongly suspect my personnel of having seen a little sorcery in this incident. The fact is, the explanation is simple and my telegram was the result of logical reasoning.

All the weaving mills over which I have control make statements each week of the output of each quality, working on a set theoretical ideal output equal to 100 per cent. From the total of these particular outputs is established, each week, the average of the mill. All these outputs are recorded on diagrams which are submitted to me and permit me at a glance to follow the changes in output through the course of a year. Every important variation immediately brings from me an inquiry as to the cause. Likewise the superintendents who notice them accompany each change with an explanation.

In the case I am considering the curve of output which had been kept up to between 76 and $76\frac{1}{2}$ per cent had abruptly fallen to about 71 per cent as the chart indicated. During the twenty-ninth week, which showed the decline, the superintendent had notified me that the sudden slump in output was due to the employment of a number of unskilled apprentices who had caused the lowering of the general output figure. He promised me that this decline would only be temporary and that after a few weeks of practice the new workers would come up to the general level of production.

The explanation seemed logical enough and might have satisfied me, but experience had taught me never to accept without verifying the explanations which are given to the managing director to justify a drop in production or a flaw in quality. It is only human for the interested person to try to shield his responsibility. It is unusual to receive a deliberately false explanation, but it is quite ordinary when not finding the exact cause to admit a non-verified hypothesis which removes the responsibility from the boss.

Verifying the Hypothesis. In this incident I set about verifying the hypothesis, "apprentices." As I have said above, each mill records not only the average output but the output for each quality. I then examined the charts showing the output of each quality and discovered that all the charts showed a drop. The mill in question has a standard production of four qualities, two easy to weave and two much more complicated. The beginners are never put at weaving the difficult qualities at first, but advance to them only after at least a year of work at the mill. The hypothesis, apprentices, then was false, since production had also fallen off for the difficult qualities on which beginners never work.

In establishing the importance of the decrease, in per cent of the previous average output, for each quality and for the whole mill, I came across the interesting fact that the drop was the same for all qualities and equal to about 7.3 per cent. The decline being mathematically the same for all the looms of the mill the inevitable conclusion was that the cause of this decline was *a general cause working in the same way on all the looms.*

Furthermore there is only one cause of a general character which could influence the production of all the looms in a strictly identical proportion: the speed of the transmission. Hence the logical conclusion: the drop in output proved that the transmission had abruptly fallen 7.3 per cent.

Now what could be the cause of this lessening of speed? There are only two possible hypotheses: (1) The motor turns more slowly; (2) the friction of the coupling gear placed between the motor and the general transmission slides. The first supposition could be set aside immediately, since the machinist of the works sends me each evening the chart of the progress of each of the motor cylinders with a tachymetric statement of the speed. But this was normal. There remained then the second hypothesis: an abnormal sliding of the coupling gear friction. This coupling operates through jaws like wooden points on the periphery of a steel pulley. These jaws are four in number and are closed by the action of two bolts. The breaking of a bolt renders the tightening imperfect and the coupling gear slips. The breaking of the two bolts would cause the stopping of the whole plant.

The logical hypothesis scientifically deduced from the study of the facts was that one of the bolts was cracked; hence my telegram. This fact would not in itself be of importance if it did not reflect several principles of the method which allows a manufacturer to manage efficiently, even at a distance, several enterprises or groups of enterprises.

Need to Control at a Distance. The tendency of modern industry is towards great international and national consolidations, which permit a more rational division of manufacture, a lowering of the net cost and the best distribution of products; hence the numerous fusions and mergings of interests to which some give (wrongly) the name of "rationalization." But the creation of these great extended enterprises has caused a problem which is new and peculiar to our age: the method which allows the chief executive of large organizations to perform in an effective manner the general direction or administrative role in the sense of Fayol.

How can a human intellect foresee, organize, govern, coordinate, and control at a distance, from a central point, a number of plants, too far removed from each other for the permanent presence of the managing director to be possible and employing thousands of workmen and engineers each of whom can become a waste or a loss to the enterprise? It is a known fact that many of the enterprises which progress well when they are small are in danger when expanded. This arises from the fact that in a small business the direct supervision of the boss can take the place, to a certain degree, of method; whilst in the large undertaking the task goes beyond the personal possibilities of the most active men. It is in this method that scientific management applied to general direction becomes indispensable.

It would perhaps be tedious to set forth in detail the formulas by which such an organization is managed from a distance. I shall therefore only state the principles, the details of accomplishment without going from one enterprise to another.

The Exception Principle. The first essential in order to direct a group of enterprises from a distance is to be warned automatically of all that happens that is irregular. This is what Taylor called "the exception principal," a sort

of "filtering" organization which arranges the time and energy of the head in allowing to come to him only such things as require his attention.

This requires two things: reports and standards. By the reports one is informed of what happens. By means of the standards the figures of the reports can be easily compared with other figures considered as standard.

Reports. These cover various periods and assume the most diverse forms. The chart which the mechanic of the machine shop dispatches to me every evening at six o'clock is one. The detailed schedule which the plant's chief accountant sends me every four weeks is another. In a general way they are all planned to be short and clear, calling for as little writing as possible. Useless official formality, "red tape" as the Americans say, is one of the dangers into which one easily falls in entrusting the elaboration of the contents of reports to persons who are not thoroughly experienced and who do not know how to segregate that which is essential for the control of operations. The accountants, many of whom view industrial statistics as an end rather than as a means, oftentimes multiply and add to the reports unnecessarily, which entails additional work, increased expense and an enmity on the part of the technical personnel, who always have a more or less avowed scorn for "papers."

When an organization of some consequence has operated for a certain time it recognizes undeniably the spontaneous springing up of various records and red tape, which if not watched, ends in slowing up the administrative machine. I watch all the reports closely which come direct to me. As to the others which ought normally to pause *en route*, at least once a year I personally make a "visit to the newly born" and simplify or cast ruthlessly out all those, the necessity of which has not been clearly demonstrated to me.

This is not always easy, for there are superintendents, who, to prove their importance, exact voluminous and involved records which they hardly ever consult. I have many times done away with this condition without having to resort to a veto, always unpleasant to give and to receive, by using a little trick. I have knowingly introduced flagrant errors into the reports which I thought too weighty. Nine times out of ten these errors passed unnoticed. It was then easy to insist on the suppression of statistics which the one concerned had not verified.

According to the nature of the records which they reflect, the reports are dailies, weeklies or cover four weeks. Four weeks represent the greatest unit of time and correspond to the "social year." A complete balance sheet with assets and profit and loss statement is set up for every four weeks for all the plants. There are therefore thirteen "commercial periods" in the legal year. This division of the year into thirteen periods of four weeks has the great advantage of letting everything in the situation be seen perfectly clearly. It prevents disagreeable surprises and facilitates forecasting; also it is more difficult to commit an irremediable error in four weeks than in a year. As these schedules and concentrated reports of production and sales are sent to all administrators, they are always well informed about the course of affairs. The meetings of the council can be less frequent, shorter, and more effective.

The plants send out:

1. Daily:

A report of the orders received.

A report of the shipments, which is done simply by sending me a copy of the invoices.

A detailed explanation of all the complaints received.

A technical report, as to quality of product of each machine in the plant. This report is made very quickly at the end of the day on diagram reports by means of conventional symbols.

Charts of the progress of the motors, of the boilers, of the temperature and degree of humidity of the rooms. These charts are made by an automatic registering apparatus and do not call for any work on the part of the personnel.

2. Each week:

A report of the orders late in delivery with an indication of the cause of the delay.

A report of the stock of raw material and that necessary for the orders on the books.

A report of the financial operations.

A report of the production by department and machine, with the percentage of waste.

A report of the orders by kind of work, with general averages.

An analytical report of working expense in proportion to production.

An analytical report of the salaries earned.

A report of the personnel turnover.

3. Every four weeks:

A complete schedule with an account of profits and losses.

A detailed analysis of the net cost for the period.

A detailed analysis of bills to be collected with an indication of contingent delays.

A detailed analysis of general expenses.

A comparative table of the balance between production and sales.

The first group of reports informs me of the daily progress of the work and on the turn of affairs. The second keeps me informed of the way in which the mill operates. The third gives me the results.

The plants and the salesmen likewise send me each day a copy of all correspondence exchanged between them or with outsiders. These copies, which are made on thin paper at the same time as the original do not call for any additional work and automatically keep me informed of what goes on in each mill. Not much time is necessary to read these copies, for with a little practice one distinguishes easily at first glance the purely routine correspondence. The others allow me to follow and observe closely and from a distance all that passes between the plants and the salesmen, between the salesmen and the clients and between the clients and the works. Informed of everything I intervene only in important cases or when an error is about to be committed. In this case my intervention is immediate.

The mills which operate the best are those to which I write the least. This system of control saves my time and screens me from seeming to drive.

To leave a superintendent, a director, or an employee to do his work without control is to see one day, by expensive losses, that he has not done his whole task. To complain, to blame, and finally to dismiss is the usual method of management, especially dangerous when applied from a distance. I have solved the problem in obliging each one to inform me at frequent intervals and

in a precise manner, what he is doing. In this way I teach each one to superintend himself. I make no remark to the employee who reported to me: "I was intoxicated and slept all day." For a man with any dignity to have to report the thing to his employer will be ample guard against a recurrence. My principle is the opposite: "Do what you will but tell me about it and see yourself that that which you have done corresponds with the model task which I have set you."

Standards. Obliging each worker, each foreman, each superintendent to report at regular intervals has above all a psychological effect of control. But these facts will be worthless for the head of the undertaking if he is not conversant with the units of measure allowing him to estimate whether the quantity and quality of the work he produces is below or above the standard.

To be able to manage, close at hand or far away on the basis of reports, it is necessary first of all to set up for each operation, a standard performance. In other words it is necessary to establish in each case "that which represents a good day's work," the classic expression of Taylor and also used before him by Colbert in the arbitration of the strike of the excavators at Nancy.

I shall not dwell upon the means which I use to establish scientifically and for each kind of work, the ideal output which may be considered equal to 100 per cent. They are standards based on time studies. I do say however that before making time studies and setting up standards of production, I standardize first all raw material, machines, methods, and conditions of work according to the wise advice of Taylor, and described by Hathaway.¹

Coordination and Supervision of Work of Several Mills. This standardization of working conditions is particularly important when the point in question is one of the coordination and supervision of the work of several mills, often located in different countries.

The role of general manager is greatly facilitated by the comparison which can be made between orders and net costs in the different plants. There is a very effective reciprocal control and all proficiency realized in one place can be immediately spread elsewhere. One of the greatest advantages of industrial consolidations comes through the reports to small isolated enterprises. But for the reports to be comparable it is necessary that everywhere they be established in exactly the same way. It is necessary to standardize the methods. This is one of the greatest tasks of the general manager and his major personal staff. The standards established, vigilance is necessary all the time to maintain them. The maintenance is more difficult than the setting up and demands an expenditure of extraordinary energy.

Men seem naturally undisciplined and the worthwhile ones more so than the others because endowed with more initiative. If a general manager, having standardized working methods in several plants deviates from a strict control during some months he will find on all sides modifications of the standards, small and large, good and bad, and the output of the different plants are soon no longer comparable.

¹ HATHAWAY, H. K.: "Standards," *Bulletin of the Taylor Society*, October and November 1927.

There must be close to the chief, a bureau of standards, to examine all proposed changes in existing standards, reject or modify the poor ones, adopt and introduce the good, in all mills according to the best method known at the time. This is in a way the "organization of progress."

With reports of operations coming to the chief from all parts and comparable each with the other, and with a theoretical ideal accomplishment, it is bound to be easy for him to judge from a distance the value of the work of all the constituents large and small.

To be able to follow all these records easily it is useful to have them presented as often as possible, in the form of charts. These can be read at a glance, give a synthetic view of the past and oftentimes allow by the direction of the curves, a sufficiently exact estimate of the future. Set down on transparent paper and transmitted in copy to the different directors and superintendents, they constitute without any red-tape, the most valuable medium of competition which the head of an enterprise has at his command.

This is also a means of saying all one has to say in dealing with touchiness. A superintendent of a plant will be hurt and finally demoralized if his chief writes to him repeatedly: "Your output is the poorest of all the plants." On the other hand he cannot be offended at the little black line which will point out to him that he is "at the foot of his class." And if he is truly a man deserving of a position of responsibility he will not cease till his line goes up with the others again.

Eliminating Unnecessary Reports. There is a danger to avoid in the organization of the remittance of reports: that is that their preparation demand so much time and work that the normal march of work is hindered or a special, expensive personnel is required. It is this fear which makes many industries hesitate to adopt scientific methods. Good sense and experience allow the chief to keep perfectly informed without converting his plants into paper factories. For example, each plant has charts¹ showing at each moment the probable date of delivery and the work in store for each loom. These charts constitute the basis of planning. If he wishes to follow the progress of operations in all the plants, the chief ought then to see these charts at least once a week and in all the plants on the same day and at the same hour. At first glance the problem seems unsolvable; in reality the solution is most simple. Each plant has a small photographic recording apparatus. In all the plants a photograph of each chart is taken on a certain day and at the same time fixed for all. These negatives are quickly developed and leave the same evening by letter for the general manager. There a simple projection lantern projects them unmagnified, on a screen, and the chief can, at a distance, follow in the smallest detail, the progress of the organization of work in all the plants which are under his direction. It takes only a few minutes to make the negatives. Consequently no increase of work for the employees is entailed and the quick transfer of very detailed papers, otherwise untransferable, is effected at little cost. As for the director of planning, who knows that the account of the errors of his subordinates will thus be transmitted to the head of the enterprise, he will make every effort to do his work very exactly.

¹ LANDAUER, EDMOND: "The Control of the Factor 'Time' in Production," paper presented at Scientific Management Congress, Rome, 1927.

The planning charts are indispensable in any plant, in order to organize the work rationally. This photographic apparatus thus allows me to "see" from a distance. This same apparatus permits me to see other things also.

If a new building is being constructed or a new machine set up the photographs are taken, and dispatched, each week for the buildings, each day for the machines, so that I can follow the advancement of the operations. Several times I have telegraphed instructions for the correction of errors made plain to me by these negatives. Above all, thanks to this simple procedure and small expense, all those concerned, wherever they are in Europe, feel the eye of the master fixed on them and deny themselves certain liberties and laxities which would inevitably follow if it was not known that I should inevitably be informed.

The reports, standards, controls by comparative charts, by photographs, and by many other procedures prevent wrong-doing for fear of blame or reproach from the chief. But fear alone is an inadequate element especially at a distance. It is necessary to double the rewards of tasks well done. This is the part of the bonuses.

Bonuses. Bonuses aim to inspire each member of the personnel, the most humble as well as the most eminent, to put the greatest efforts and intelligence into his work. According to whether they are well or poorly conceived these can be the best or worst of things. I know of plants where awkward bonus systems have provoked discouragement, sabotage, even strikes.

The most important characteristic of a bonus system ought to be justice. The bonus ought to reward personal effort and that only. Nothing breaks the spirit of a personnel so surely as the concession of rewards which have not really been earned, unless it is the loss of bonuses despite a sincere effort, on account of circumstances independent of the will of the one concerned. This is why I consider as absolutely injurious the participation of the workers and employees in the annual benefits of the enterprise, over which no one, save the general manager, has decisive action.

For each kind of work there must be a special bonus system which rewards or punishes each man's personal action. Thus it is that dyers are interested in the production of the winders which follow them immediately in the flow of work, for the winding will be good more or less according to the care which the dyers have taken in their work. The winders are interested in the production of the warpers for good bobbins make warping easy. The warpers are interested in the output of the weavers, for upon the perfection of their warp will depend a great deal the output of the mill. The weaver receives a bonus on his output, which depends upon his skill and attention to his work. He receives also a second bonus, called a quality bonus, which recompenses him for the perfection of his work.

The foremen, the technical director, receive two bonuses: the first based on the output of the weavers, the second (and most important) based on their quality bonuses; for it is in the perfection of the work that the action of the foremanship and technical direction can be most effectively felt. The chief accountant receives a bonus when the correct monthly balance sheet is delivered within fifteen days after the close of the period accounted for and the bonus decreases in proportion to the length of delay of the dispatch.

By analyzing with care each kind of work one can almost always establish just bonuses which inexorably bind the reward to an effort toward lowering the net cost or toward the improvement of working conditions or of control. Once this connection is well made, the interests of the personnel and of the enterprise become identified and the main cause of difficulties has vanished.

The head of a great and very extensive enterprise finds himself therefore supported by a whole army of assistants who cannot do harm to the undertaking without harming themselves. The incompetents, and the poorly adjusted distinguish themselves by their lack of gain, which immediately provokes an intervention, seeking at first to adjust, then eliminating in the hopeless cases.

The Part of the Managing Director. All the art of direction at a distance consists then in binding the interests of the men to their work, to make known immediately what happens, and to show each member of the personnel that he is one of such an organization that all errors will be inevitably conveyed to the chief. The result of this last is the presence of a permanent morale, in even the smallest corners of the plants, an ubiquity which physically could not be realized.

We have all, when young, read a fable in which the necessity of the eye of the master was emphasized. The great modern industry has not suppressed this necessity but has modified its mode of action. The eye should manage to see from afar and the master to be everywhere. Only scientific organization, well understood, can permit this.

ESSENTIALS OF LARGE-SCALE ORGANIZATION

By W. J. DONALD, *Managing Director, American Management Association*

Probably the most important trend of business is that toward large-scale operation, the success of which is based on the substitution of good management for poor management. We are all familiar with the cataclysmic spread of the consolidation movement during the last few years and while it has temporarily subsided in some degree, we should not reach the conclusion that the trend has ended or in some lines of business even more than scarcely begun.

This development takes two forms. First, there are the various classes of consolidation of companies. Second, there is the expansion of the individual company through natural growth due to good management. Many companies are large because they have had good management and have just naturally expanded. Other companies are large because they secured good management, frequently through merger.

To a very considerable extent, the modern management movement has found its source in the larger units of business. While there are hundreds and thousands of well-managed small and medium-sized companies, nevertheless a large part of the best in modern business administration can be traced to its origin in those companies which today are among the largest because of the quality of management which brought about their growth and size.

Organizing the Management Group. The first essential of large-scale organization has to do with the problem of organizing the management group. This problem appears with special force in most large organizations which come about through merger. The weakness of the merger movement usually appears primarily at the top and is not infrequently the result of a vicious compromise in regard to executive positions aligned with financial control.

We hear a good deal about the dismissal of executives from mergers, executives who were not needed by reason of the merger. It is my observation, however, that as a rule, new consolidations carry a larger executive force, at least for a time, than the affairs of the business warrant and that, in general, there are not enough dismissals following mergers, that too much time and effort are spent in sheer fence building and internal company politics instead of in constructive effort.

It takes time, of course, for the process of the survival of the fittest to work out, but in the great majority of cases the process is inexorable and perfectly legitimate even though often it comes with too much delay.

In general, too much consideration or rather the wrong type of consideration is given to the personnel absorbed through mergers and this same principle usually applies, to some extent, in other large scale organizations. Executives and other personnel not adaptable to a changing situation, especially in the case of large scale operations, are retained through sentiment or a false sense of obligation, not only to the detriment of the company, but also to the detriment of the men themselves who ought to readjust themselves at the earliest possible date and, who, if necessary, should be forced to readjust themselves.

Some of the best merger examples are those in which men who did not fit the new situation were given an immediate release with a liberal dismissal salary or wage and thus given opportunity for a readjustment while there was yet time. It is no favor to any executive or other employee to continue his employment beyond the period of usefulness to a company with the result that the inevitable readjustment is possibly postponed to a time when a complete readjustment is impossible.

Sound Executive Organization. Assuming that large-scale operations will more and more take a major place in business, it is necessary to work out a new technique of management to meet this new situation.

In the course of compromising on executive personnel, there is the imminent danger of assigning to persons responsibilities too large for their range of experience. Executives who have formerly been able to cope with the many details of a small scale operation often find it difficult to confine their thought and activities to matters of policy and principle and to delegate to others the execution of those policies.

On the other hand, there are many cases of the assignment of executives to particular fields of activity only with the result that an executive accustomed to a wider range of activities finds it impossible to leave to others activities over which he formerly had jurisdiction.

The same condition applies to a greater or lesser extent in large corporations which have simply grown or even in corporations which have expanded

gradually to a size of major importance. The pressing situation, however, which the merger movement of recent years has brought about is bringing prominently to our attention the importance of the organization of the upper management group and it has been suggested that the merger movement will force us to develop a new technique of management organization and a new theory of organization or that at least the merger movement will bring about a wider application of principles and practices already effectively adapted to older large scale operations.

Analyzing the Executive's Job and Job Requirements. In the first place, much more careful attention will have to be given to organization relationships and the assignment of responsibilities to executive and departmental personnel. If the fact does not fit all companies, all of us can at least think of some organization of which it is true that executive responsibility and jurisdiction have just grown up without much, if any, scientific consideration of the ways in which responsibilities and authorities should be assigned.

Executives, no less than the worker, have an instinct for workmanship. They get a thrill out of their occupational activities but, in addition, the great majority have a love of power and influence which is much more highly developed than among the rank and file. We are all aware of how a certain type of executive acquires a collection of more or less unrelated activities, for some of which he is not at all adapted, some of which sometimes should be entirely separate. An illustration of the latter is found in those cases in which the auditor is responsible to the executive whose accounts or other transactions are being audited.

What is needed in most companies is a thorough analysis of executive work to be done in terms of the kind of decisions to be made and in terms of the kind of influence to be exercised. It is necessary to distinguish, for instance, between an executive's contribution to a determination of policy in terms of responsibility, or to use an Army phrase, in terms of "command," and his contribution through advice or counsel. The comptroller, for instance, is essentially an analyst of operations and his relation to policy making is essentially that of a counselor. If he is a party to the execution of policies he immediately becomes interested in the interpretation of the results of the execution and loses the desired impartial viewpoint.

Managers of personnel departments who assume responsibility for execution of decisions similarly lose the impartial viewpoint and, worse still, are a party to a division of authority which makes it impossible, or at least difficult, to locate final responsibility.

There is a great need in every organization for a clear cut definition and understanding of the different kinds of responsibility, or to put it in still more generic terms, the different kinds of contribution to the solution of a problem. One contribution may be that of complete line responsibility—command. Another contribution may be that of advice and counsel based upon analysis and comparison. Another kind of contribution is that of persuasion, the selling of ideas and inspiration. Rarely, if ever, are all of these contributions to policy making to be expected of any one executive.

Assuming that we have analyzed and classified executive positions in such a way as to have a job description, the next problem is to classify and group

them in terms of the man requirements of the job so that different kinds of activities may be grouped according to the qualifications required for those jobs. The result is functionalization. The lack of such an understanding of the job requirements and man specifications is probably much more at the root of misplaced assignment of responsibilities than the lack of courage of major executives to deal with such situations as frequently exist. Lack of courage is frequent enough, but lack of knowledge of what should be done and of the basic elements in making a decision in regard to assignment of executive responsibilities is very much more frequent.

Decentralized Responsibilities. The second major essential of large scale organization grows out of the fact that large scale operations almost inevitably destroy the intimate contact of the principal executives of a business with the rank and file. Large scale operations, especially those which have been brought about through merger, are likely to involve several plants, located often at considerable distance apart, a considerable number of branch offices and sometimes more than one sales organization each of them devoted to a different line of products or services. Consequently, it becomes impracticable for a major executive to form judgments regarding the efficient conduct of the business through personal contacts with all units.

The great weakness of large scale operations which have been brought about by merger, particularly for a few years after the merger takes place, lies in the habit of extreme centralization of control of operations. In many cases this habit is simply continued from preceding practice. It is also intensified for a time by what seems to be the necessity for coordinating under standard practices and policies the efforts of those who were formerly competitors or at least executives of other companies.

But the problem of corporations which have grown gradually through a natural process is only partially different, even though its causes may be different and the endless debate regarding the respective merits of large-scale organization, medium-sized organization, and the small type of organization continues to revolve around the question as to whether or not it is possible in large-scale operations to maintain the advantages of small-scale operations while gaining the advantages of large scale operations.

The most successful efforts to reconcile these advantages and disadvantages lies in the direction of the breaking down of operating units through decentralization in such a way as to make individual executives down the line in the organization responsible for an operating unit of a size similar to that in which the chief advantages of small-scale operation appear, providing these decentralized units with facilities that will provide knowledge in considerable degree commensurate with that of the personal knowledge of the manager in the small scale organization.

In the sales organization this means the establishment of branch houses covering territories of appropriate size, embracing a sales force which is within the capacities of a manager to supervise.

In the manufacturing organization it means a breaking down into branch plants and operating units within the plant, each supervisor up and down the organization being responsible for a unit within the capacities of one man to supervise.

The same principle applies in the operation of public utilities, in the management of an office or in the conduct of a wholesaling or retailing business. In retailing, notably, it has been worked out by certain of the more successful chain store organizations.

This decentralization of responsibility is usually accompanied by a large dose of encouragement for experimentation in decentralized operating units, but there are still many large organizations in this country in which practice is standardized at the top and superimposed on the organization with little or no consultation upward from the bottom or inward from the territories.

This comment does not in the least suggest that top management should not actively coordinate the activities of decentralized units or particular lines of activity within the company, but a program of standardization of operations of branch offices, or agencies if you will, which puts a blanket on all independence of thought in the units is almost certain to be the death of progress and destructive of that development of executive material without which men will not be available for executive promotion.

A program of training of salesmen, for instance, which is so standardized as to leave nothing to the ingenuity and constructiveness of branch managers and agency managers may be good at the outset, but it will be dead in a few years. A program of standardizing branch office operations as regards office personnel, office records, etc. which clamps the lid on experimentation will destroy the initiative of executives and stifle the development of methods which must be continually improved.

Decentralization of responsibility, while it lacks some of the advantages of complete standardization of operations and while it introduces an element of continual growing pains, nevertheless, has the vast advantage of creating a point of view and a spirit out of which come constantly improving standards of operation which may be seized upon here and there for adoption or improvement throughout the whole organization.

As a matter of fact, there is even a strong tendency toward the decentralization of staff activities by reproducing headquarters staff departments in various operating units such as in branch factories or district sales offices. Branches sometimes have their own personnel departments, office planning departments, etc., responsible directly and only to the manager of the branch.

There was a time when one could find, and still there can be found cases, in which staff departments attached to district branches reported to corresponding staff department managers at headquarters rather than to the manager of the operating unit, but this today is rare. The relationship of the staff department at headquarters to the corresponding staff at a branch is, or ought to be, a relationship of intercommunication and education and in no way should the headquarters staff department exercise command over corresponding departments at branches.

In many quarters there has grown up a conflict between the necessity of decentralization of responsibility combined with accountability and that part of functionalization which is represented by staff or facilitating departments and in most organizations that conflict has yet to be faced and the problem solved. The solution is to be found in the determination of stand-

ards of operation which may become a basis by which top management may measure the effectiveness of decentralized operations or, to put it another way, for measuring the effectiveness of executives who assume responsibility for unit operations in a decentralized scheme of organization.

This type of decentralized organization facilitated by staff departments has the great merit of providing for locatable, because undivided, responsibility, a condition which develops potential executive capacities. Under it, the effectiveness of executive action can be measured not only because there are no cross-currents of authority, but also because standards of operating effectiveness have been set up and adopted as a program of operation. Under it also, executives gladly assume responsibility.

Experience and responsibility are great teachers, despite the prevalent idea that we can learn more economically second hand. Passive study does not of itself produce executive material. Taking orders from others does not produce the best executive material. Accepting or using the proper kind of advice and help without abdicating responsibility does produce executive ability and produces it more effectively in most cases than if no staff departments capable of helping to determine standards of operation were available.

Establishing Standards of Operation. Small-scale operation of business usually required of the business executive more capacities than it is fair to expect of any one man. In a small manufacturing organization the president or general manager, more likely the owner, is in effect not only president and general manager, but also treasurer, works manager, sales manager, and accountant—usually a very poor accountant.

In a medium-sized business the president, who is general manager, acquires a treasurer with capacities necessary for the job. He acquires a general sales manager with the necessary abilities. He acquires a production executive, if that is his line of business, with the necessary training and experience. He usually acquires an accountant who at least can help him to hold an inquest on the business. In such an operation, however, standards of effectiveness are usually a matter of guess work and opinion with its attendant injustice of judgement and uncertainty of results.

The more the organization grows in size and the more the principle of decentralized responsibility is established, the more difficult it becomes for the major executives to appraise the quality of the management of decentralized units. The solution of this problem lies in the setting up of standards of operating efficiency, standards that, of course, change from time to time as external business conditions change, as technological conditions change and as the efficiency of the organization changes.

There are, of course, a great variety of operating standards which may be made the basis of judgment as to the quality of management of operating units. Just a few of them may be mentioned as follows:

Standards of output for various classes of office workers.

Standards of requirements for jobs to be filled: clerical, agency, supervisory, and others.

Standards of production for branch offices in terms of economic conditions of the territory and in terms of current business conditions and terms of products or services to be sold, etc.

Standards of expense per unit of business sold.
 Standards of returns on investment.
 Rates of pay for units of work to be done.
 Time required to perform an operation: time study.
 Method of performance of an operation: motion study.
 Standards of cost for production, sales, clerical, and other operations.
 Standard ratios between total volume of business and capital investment.
 Standard ratios between current liabilities and current assets.

This list of standards might be multiplied at great length. Enough illustrations, however, have been given to illustrate the principle involved, namely, the necessity of setting up standards against which operating results may be measured as a basis for permitting major executives to determine the relative efficiency of the operations in various units and as a basis for discovering weak spots in the organization so that attention may be directed to the proper point of attack.

Providing Staff Assistance; Facilitating Departments. The necessity for setting up standards of operation in large-scale operations organized on a decentralized plan is the chief factor which has brought about the establishment of the many staff or facilitating departments with which modern business is often encumbered and by which it should achieve new standards of results. Among these departments are: accounting, including cost accounting, departments, budget departments, personnel departments, office standards departments, statistical departments, production control departments, time study and rate setting departments, sales research and sales quotas departments, etc.

Primarily, the object of all of these departments is to assist management in setting up standards of operation and standard methods for the various units in the operating organization. The process of setting up those standards and of getting operating executives to use those standards effectively are both, to a considerable extent, an educational and training process. If the standards of efficiency and the standard methods are developed in an atmosphere of cooperation with the line organization and in an atmosphere which is constantly being encouraged on the part of the line organization, the constant setting up and the constant revision of standards is of itself an educational process which is carried on by the staff organizations that we have mentioned. But probably the greatest internal organization problem current in business lies in the field of the relationship of the various new management specialists to the rest of the organization. One can illustrate best possibly by reference to two or three particular types of staff men.

We are all familiar with the extent to which American business corporations have established personnel departments. They have had a curious history. At first, many personnel departments were established with the idea that they would take over the entire personnel job on the assumption that the personnel job was being centralized. This found expression in the idea that all hiring and firing of the rank and file should be the responsibility of the personnel department. In some cases at one time they even decided on all salary increases, they undertook to rate the entire personnel of the organi-

zation and there were even eager claims for control of the executive personnel situation well up into the organization.

Some departments claimed, and, in some cases, received a good deal of authority in the sense of command. Many of them exercised more authority than had been assigned to them. They assumed a position of "command" as distinguished from the function of "facilitation." Supervisory heads of departments throughout the organization at first resented this condition but later acquiesced because that type of organization naturally produced a division of authority in which could be found exemption from complete responsibility.

The personnel movement at the end of the war was full of the most grotesque ideas about the authority of the personnel department and about the character of the responsibility of the personnel department. One form in which this idea appeared was the designation of heads of personnel departments as "personnel managers," an outcropping of an unsound idea which I have always regretted to observe wherever it appeared. The personnel officer of a company does not manage the personnel of the organization with the exception of the personnel within that particular department itself.

Words and phrases are great makers of the ideas for which they stand and it is my opinion that many a personnel executive handicapped himself and his work by seizing on or accepting a title which induced in his own mind wrong thinking regarding his relationship to the rest of the organization and induced in the minds of others a resentful or contrasuggestive attitude toward the personnel department.

We have come to realize that the personnel job is the job of every department head or supervisor from the lowest rank up to the president. The best personnel and industrial relations men that I know claim no authority whatever, though they might claim "control" in that highly specialized sense of staff influence through knowledge of the facts and through persuasion and advice.

We have come to learn that we cannot hold supervisors of any rank responsible for operations unless they are responsible for their personnel, including a final decision as to employment and power of dismissal at least from the department and, within the range of policy, decision as to salary increase.

With the recognition that the personnel job is every supervisor's job has come also the recognition that the function of the personnel department is that of a "facilitating" department and that it is not an operating department.

We might illustrate also by reference to office planning departments, many of which have come into existence. There are those who argue for responsibilities and authorities for such planning departments similar to the authorities and responsibilities formerly claimed by personnel departments. They assume complete command, for instance, over offices of particular divisions of a company's operations. They assume responsibility possibly for determining and controlling the volume of work to be performed and for controlling the flow of work between departments.

There comes to mind an assistant actuary with a working force of well over two hundred within his own special actuarial department, a working force including, obviously, quite a number of supervisors. One can well

imagine problems of supervision, office layout, problems of routing of work, problems of control of output of clerks within the department, and problems of control of volume of work in such a fashion as to regularize the flow of work, etc. which come up in that department. One cannot imagine any office planning department undertaking to solve that problem in and of itself without the most serious disturbance and possibly destruction of morale within the department and opposition and caustic criticism by the department head himself. One can imagine a planning department offering its services to that department or one can imagine a planning department being sought out by the department head for assistance in solving the problems which may come up from time to time.

A department head, with intimate knowledge of his job, may achieve great improvements that would not have been made to the same extent without the help of an office planning department, help which should represent a detached point of view. The office planning department can have a perspective of the relationship of a particular division to other departments which the department head could not be expected to have in as great degree.

This brief discussion serves to illustrate the facilitating advisory relationship of office planning departments toward the rest of the organization, a relationship which leaves responsibility for results where the function of command is exercised but a relationship which provides those outside points of view, and often technical help without which the same results could not be achieved.

We have referred already to the comptroller, or to use a term of more universal meaning, the head of the accounting department. In manufacturing and in other lines of business, the function and the relationship of the comptroller to the rest of the organization are in a state of much misunderstanding and are subject to a good deal of debate. There is even a dispute over the proper spelling of the term, but the important issue is the question as to whether or not this new executive called the controller has the responsibility for making decisions as to what shall be done: whether an executive should not, may not, or ought to spend.

This question was once raised with a comptroller in approximately the following words, "I see you spell your title 'controller.' Does that mean that you control, or does it mean that you analyze the operations, present your analysis to the operating executives, and leave to them the responsibility for decision?"

This particular comptroller answered, "You bet I control."

The question left something to be desired because there is a difference between control and command. Control may be exercised not only through command, but also through advice and counsel, through knowledge of the facts, through persuasion and even, for that matter, through the influence of personality, but a very hazy line is drawn in many cases between control and command and it is very easy to pass through that line without observing that the line has been passed.

This whole question raises the debate as to whether or not heads of accounting departments, more generally called comptrollers, should reach conclusions and express opinions as to what ought to be done. There are those who

believe that such conclusions and opinions if acted upon or if not acted upon will thereafter warp the impartiality of the analytical work of an accounting department and destroy the open-mindedness of the comptroller and probably build up a counteracting attitude among operating executives.

Of course, the reason that many accounting departments have assumed responsibility closely akin to the function of command lies largely in the fact that altogether too many, one might say the great majority of, operating executives know so little about accounting, accounts, and statistics that they are unable to use accounting and statistical data properly to make operating decisions. Failure so to do almost inevitably leads a major executive to rely too much on the judgment as well as the analytical ability of his accounting department and too often operating executives discover that the situation which has thus arisen offers them a beautiful alibi for operating inefficiency.

This problem of organization will not have been solved until operating executives from top to bottom in proper degree have acquired a sufficient command of the utilization of accounts and statistics to permit them to assume a responsibility for decisions with the help of accounting and statistical data. When that period has been reached, it will have been recognized that the accounting department or the statistical department is a facilitating department, that its head does not exercise the function of command in any degree except within his own department and that it exercises the function of control only through knowledge and presentation of the facts and possibly through advice and persuasion.

"Functionalization" Defined. Functionalization in the proper sense of the word means organization to provide for the execution of responsibility by persons having the requisite qualifications for those responsibilities. The large scale operations which have brought about the introduction of specialized departments have quite obviously required a considerable degree of executive functionalization, to use a much abused and a much misunderstood term.

The setting up of a personnel department, an office planning department and similar departments does not, in and of itself, constitute functionalization, though the term functionalization has often been used to refer primarily to the setting up of such staff or facilitating departments.

Functionalization does include the setting up of departments which exercise an advisory, research, and facilitating function, but functionalization also includes the organization of functions that are in the nature of command such as the organization of the sales department or the organization of the treasury department.

It includes also, for instance, a clear-cut determination of the respective duties of the chairman of the board and of the president if there be both in an organization and the job of functionalization is not complete until the groups of activities based on similarity of executive requirements are paralleled by executive promotions or readjustments that place in such positions men qualified to exercise the functions.

Incentives for Executives. The advantages of sound executive organization at the top combined with decentralized responsibility and with facilitating services which help to establish standards, no matter how well worked

out, will fall short of the best results, however, unless the compensation of executives up and down and back and forth across the organization is so arranged as to place a premium not only on individual effort, but also on coordination between departments and cooperation between line operating executives and department heads and the heads of staff or facilitating departments. The injustice or unfairness of the compensation of executives, however, unintentional, can destroy a large part of all of the values that may be achieved through other organization principles and policies.

The principle of incentive for executives can, however, take several forms. It is still true that the great majority of corporation executives other than owner-managers receive their compensation in the form of salary only and even owner-managers usually receive a salary, a part of their income taking the form of a somewhat speculative return on the investment, usually inaccurately called "profits."

It is not our purpose at this point to debate the relative merits of salary versus extra financial incentives as methods of compensating executives. It is sufficient to point out, however, that a salary basis of compensation will have become a true financial incentive when the organization adopts the principle of revising salaries on the basis of known results of operating executives compared with operating standards set up for the organization by top management with the help of staff assistants and the information they provide and with the knowledge, understanding and concurrence of the operating executives.

A district sales manager who can produce results more favorable than estimates which have been concurred in not only by the chief executives, but also by staff departments and by himself, has, other things being equal, a just claim for upward salary revision which no wise organization would withhold. The standards against which his operating efficiency may be judged may include a wide variety such as number of orders secured, total dollar value of orders secured, standard sales costs such as office expenses, traveling expenses, etc. It may also include collection standards, standards regarding the size of order, standards for determining whether or not the whole line of products or services is being marketed.

Standards for salary for a production executive may include standards of labor turnover, standard costs of production, standards for waste, standards for inventory of raw materials and goods in process, or, depending on the situation, a variety of other standards of manufacturing operation.

The point is that salaries without extra financial incentives can provide a thoroughly sound financial incentive for operating executives provided the standards are properly set, all necessary standards taken into consideration and provided the operating executive fully understands and concurs in the standards which the organization sets up; but it should be pointed out that an effort to compensate executives in any form which takes standards into consideration places on management a serious responsibility to establish standards that are reasonable and fair else the use of those standards for helping to determine compensation may become a destructive and demoralizing rather than a constructive influence.

But the trend is very distinctly toward the placing of executives on some form of extra incentive basis of compensation, a trend which is very much facilitated, not only by decentralization of responsibility, but also by the current trend of setting up of standards of operation. The form of extra incentives for executives varies greatly between different companies and in many companies it varies for various classes of executives within the organization, one method being used for executives high up in the organization and another being used for executives in different branches of the organization such as manufacturing, sales or in the office.

Some plans of extra incentives for executives put a premium upon cooperation between major executives and more or less take the form of managerial profit sharing in the higher ranks. They are particularly suited to those executives whose work calls for cooperation with other major departments, though the same principle applies at least in some measure throughout the entire organization.

Other plans of extra incentive lay emphases on the securing of results in excess of standards set up for the particular operating unit and are particularly applicable to executives who have largely within their own control the operations over which they have jurisdiction.

Some plans provide for a guaranteed salary above which a bonus is paid. Others provide for what in effect is a drawing account against a total volume of compensation based entirely on operating results.

Some plans would seem to assume that standards of operation are hard to set and therefore establish a basis of compensation on broad general terms rather than on results in excess of specific standards. Other plans assume the careful setting of standards and provide for extra incentives based on comparison with specific standards or combinations of standards.

The trend is very distinctly toward the careful setting up of standards, the careful measurement and recording of results and, so far as possible, compensating the executive on the basis of the results of his decentralized operating unit.

Developing the All-round Executive. The major problem of large scale organization is one of the finding, usually through development, of a group of large-scale executives, men with a broad, comprehensive point of view. There are certain lines of emphasis in executive capacity which in most fields of business are today essential. These lines of development are usually paralleled by corresponding staff departments, the purpose of which is really twofold:

1. To help develop standards of operations.
2. To help develop executive capacity.

Assuming that we have the proper sales executives, the proper accounting executives and the proper financial executives who major in their respective fields, nevertheless, there are certain phases of business management which are or ought to be the property of every executive and every supervisor in the company. To these we wish to return briefly.

First, every executive and supervisor must become more and more a personnel man. The day has gone by when personnel problems are being

solved by personnel departments alone. Personnel departments do make it easier to solve personnel problems. More particularly, they are designed to develop the capacities of executives to deal with personnel problems either in terms of standard practice or to improve the standards of personnel practice and policy by searching out within the company and elsewhere new methods which may be developed in decentralized units in an atmosphere of warmly encouraged experimentation.

Second, let us return for a moment to office management problems which appear not only at the headquarters office but also in agencies and branch offices, in the treasury department and in general administrative offices. No office planning department can solve all of the problems. The best practice lies in developing the office management capacities of all supervisors and all department heads whose offices contain such employees or office operations.

Third, planning a program for an operating period must become the accepted practice of all executives in an organization. Planning this program is budgeting. Budgeting is not the setting up of a set of expense maxima. Estimates often should be exceeded as conditions within an operating period change. Similarly, in many cases estimates should not be used up simply because they have been approved.

If planning a program in the form of a budget is to be participated in by all classes of executives, the essential requirement is that those supervisors and executives shall become accounting and statistical minded, at least sufficiently so to permit them to interpret accounting and statistical data as a basis for operating decisions.

It is no part of a budget director or whatever he may be called to decide that expenditures cannot be made because the estimated maximum has been reached. That responsibility of decision should rest with the department head, or his superiors, if necessary. It is the budget director's responsibility to make the comparisons and to provide the necessary information on which decisions can be made wisely.

Fourth, while many lines of business will undoubtedly set up public relations departments, yet no public relations department can possibly solve the public relations problems of any line of business. The establishment of a public relations department is only the beginning of a public relations program. The problem will never be met and solved until every executive takes his proper attitude toward the public and toward service to the public and until the rank and file of the personnel through attention to the subject by supervisors become public service conscious and effective in their contacts with the public.

While we are accustomed to thinking of certain lines of business as being essentially affected with the public interest, nevertheless, the growth of large scale operations will gradually affect all lines of business with the public interest, possibly not in the common law sense, but, nevertheless, in an economic and social sense.

Finally, if we are to have the kind of large-scale business executives that obviously will be needed and for which there is always a demand, we must develop a new understanding of organization relationships and organization theory. There is need for a clear-cut statement of organization theory, but it is hard to get because executives of even the largest corporations are

not ready to admit that the practice of organization relationships is still far from satisfactory.

One of our difficulties lies in the attempt to transfer to business administration certain doctrines of governmental structure which are the cause of those conditions in governmental circles in which many of us, as citizens, find no comfort. We refer particularly to the theory of checks and balances, and the theory of division of powers between legislative and executive bodies. Both of these are too easily translated into a theory favoring division of responsibility.

We do not propose to debate the merits of our plan of governmental structure in the federal or state field, but it is safe to say that, when city after city, some 500 or 600 of them, have adopted the city manager plan of government embracing the principle of locatable, because undivided, responsibility, as supposed to be found in business—this is no time at which to be incorporating into business a doctrine from which our municipal governments are trying to escape through the adoption of the city manager plan of government.

Large scale operations will force upon us intensive study of the problem of organization, both in organization relationships and organization theory. Without it, attention to personnel, the setting-up of the personnel department; attention to office management and the setting-up of office planning and service departments; attention to budgeting and the setting-up of a budget department; a better understanding of accounts and statistics and the setting-up of corresponding departments; more attention to public relations and the setting-up of a public relations department will not solve the problem of large-scale operations.

In conclusion it may be said that the essentials of large-scale organization are:

1. Setting up the managing group in terms of jobs to be done and in terms of the man requirements for those jobs.
2. Decentralization of responsibility in operating units.
3. Setting up of standards of operation.
4. Establishment of staff departments, partly to help establish standards of operation and to compare results with those standards and, even more important, to help develop executive capacities.
5. Adoption of the principle of incentive for executives.

Clear-cut and scientific assignment of responsibilities, the decentralization of those responsibilities, the setting of standards of operations and comparison against those standards, these combined with the principle of incentive offer opportunity for development of executives through experience and initiative. They provide for the discovery of successful executives through comparison against standards. In other words, they provide opportunity for encouragement to and for discovery of efficient executives and they do it in terms of those organization principles without which large scale operations will be of doubtful economic or social merit.

CHAPTER II

THE TECHNIQUE OF MANAGEMENT REQUIRED TO MEET RAPIDLY CHANGING CONDITIONS

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An old sage once remarked that if there was anything about business that remained constant it was the fact that conditions were constantly changing. Today, it is the rapidity with which these changes are taking place, and how the situation can best be met, that is occupying the attention of business executives. It is a big subject, and one deserving of considerable attention. Wide variations exist between different industries, and the importance of the problem will vary accordingly. In one case the emphasis will be upon meeting rapid changes in consumer demand, style changes, or new demands. In another case the point of greatest complication will be meeting rapid changes of a technical nature, discoveries of new substitute materials, improved basic processes, or new and greatly improved machinery and equipment. Considerable variation likewise exists with reference to the degree of rapidity with which conditions change. Certain industries, such as the radio industry, have been characterized by very rapid changes. In other industries changes have taken place at a more leisurely rate, resembling more closely the regular natural rate of growth or expansion in the industry. In general, however, the trend in recent years has been toward both an increasingly rapid rate of change, and the spreading of the area affected by rapidly changing conditions to more and more industries, until today, it is not safe to consider any industry immune from this phenomenon. While this is undoubtedly true, it is also true that a corresponding development has taken place in management's ability to meet rapidly changing conditions. Not only has management technique in this direction been greatly improved in recent years, but also many of the changing conditions are becoming more rational, or at least better understood, and consequently within the realm of possible forecasting. So we have the business paradoxes today, of industry desiring stability, yet promoting change; of conditions changing more rapidly with a wider area affected, while within the system the ability to meet the situation has correspondingly improved. The poison always has its antidote, if only it can be found. The purpose of this paper is to help to find the antidote for rapidly changing conditions. It may seem at times to deal with rather obvious considerations, but it is often these more obvious things that are neglected in the rush of daily routine unless specifically provided for. No claim is

laid to a comprehensive treatment of the subject, and the emphasis is placed on presenting a technique of rather general applicability. It is hoped that it will at least succeed in stimulating further discussion of the problem.

How Management Meets Changes. To keep a business in tune with rapidly changing conditions is a major responsibility of management. If management were always purely personal, and could anticipate the change well in advance, the problem could hardly exist. Neither of these assumptions is true, however, under ordinary circumstances. Management is not purely personal, except possibly in a one-man business, but works through an organization, and often an elaborate and rather rigid one at that. Nor can management be said always to know sufficiently in advance which way the cat is going to jump. Many of the most perplexing problems of business would immediately vanish if such a utopian situation could be established.

A recent survey conducted under the writer's direction showed that there are three general methods used by management in meeting rapidly changing conditions. They are the following:

First, by following what might be called an *opportunistic* policy. No special provision is made to cope with the problem. Adjustments are made in the business whenever knowledge of change happens to come to the attention of those in charge, and it appears to them to be advisable to take some action about it. This, of course, is hardly a desirable or safe policy to follow, even in the small or fairly stable business.

Second, a large number of firms have placed their reliance in the *trade association* to keep them informed on changing conditions and to suggest remedies needed. Adjustments in their organization are usually made only after the need for them has been pointed out by the trade association, and sometimes not until pressure of the changed conditions makes such adjustment imperative. Something will be said later about the excellent work being done by trade associations in this direction. At present it is sufficient to note that neither of these plans, taken by itself, is entirely satisfactory. Assistance from the trade association should certainly be utilized, but it should fit into a broader plan of which it is only a part, even though a very important part.

Third, in a few cases, but the number is rapidly increasing, *definite provision has been made to meet this problem and a carefully worked out technique developed*. Naturally, this holds true for the more progressive, and usually the larger, firms, as well as for firms in the industries that have been most subject to the influences of rapidly changing conditions. The technique suggested in this paper is based primarily on practices found in this group of concerns, with such modifications as seem desirable to emphasize certain underlying principles and to make it of more general applicability.

In order to meet changing conditions, management must be aware of the changes in time to make the necessary adjustments to meet them. This requires proper utilization of sources of information concerning changes, coupled with a healthy organization sensitive to change and flexible enough to permit rapid adjustments to the new conditions. Before taking up in detail a discussion of the necessary technique, it may be well to state briefly the three major requirements. They are:

1. A fact-founded operating organization.
2. Anticipating and forecasting rapidly changing conditions.
3. Maintaining a sensitive and flexible organization readily amenable to change.

An elaboration of these three requirements will occupy the balance of this discussion.

A FACT-FOUNDED OPERATING ORGANIZATION

The first requirement of management technique is, then, to have a fact-founded operating organization. This is true regardless of the size of the business or conditions under which it operates. The action taken by an individual business at any time is governed by two groups of factors: first, *the personal factors, calibre of executive personnel and executive decisions*; and second, *impersonal or organization factors, such as policies, standards, written or printed instructions, and budgets or operating schedules*. The importance of alert, well-informed executives cannot be overemphasized. Fact-founded executive decisions are the very cornerstone of management. Statistics, and all other information, is only an aid to sound judgments by executives. The use of impersonal factors as action guides is in line with operation on the exception principle of management and needs no justification. When originally formulated, policies, standards, and other organization factors should be based on a careful study of conditions. As long as conditions remain the same they serve to guide ordinary activities of the business, calling for higher executive decisions only to care for the exceptional cases as they arise. With both groups of factors, however, a real danger exists in a failure to keep them in tune with change, unless the necessary steps are taken to accomplish this result. Habit, custom, inertia, and lack of prompt and reliable knowledge, are some of the chief forces retarding adjustment on the part of the personal element. Failure to make definite provision within the organization for keeping the impersonal factors up to date accounts for the major difficulty in this group. This implies making the necessary provisions for securing and utilizing information on rapidly changing conditions.

To keep management aware of changes a regular flow of immediate and reliable information must be established from the sources of information deemed to be reliable, to the points of utilization of this information within the organization. This is required by executives in making decisions in routine matters, as well as in advance planning and operating activities, such as in buying style goods, and similar work. It is necessary in relation to the impersonal factors, partly to insure their proper application as illustrated by the need for a knowledge of competitors' prices in enforcing a certain price policy—and partly to make possible an evaluation of the present desirability of these factors. Policies, standards, and other organization factors are reliable guides only when the conditions affecting them are essentially the same as when these guides were formulated. A change in conditions may render them obsolete or inadvisable or may necessitate merely a quantitative adjustment, as when a master budget is altered because of sudden changes in purchasing power or demand of customers. In any case it is necessary to know what changes are taking place to be able to judge the

present value of the action guides under existing conditions, and to determine what adjustments, if any, may be needed.

In order to keep posted on conditions, it is necessary to know what changes to look for, to know where to look for information about them, and to provide a regular flow of this information from its source to points of utilization within the organization.

What Changes to Look For. The first consideration is to know what changes to look for. At the outset it should be noted that there are many different kinds of changing conditions to be encountered. In most cases there is a fairly regular change taking place, interrupted at times by somewhat irregular variations. In regard to economic and social conditions there is a sort of normal healthy rate of growth or unhealthy decline to be encountered, which may be temporarily accelerated or retarded by such phenomena as the business cycle and seasonal variations. These changes can usually be anticipated under ordinary circumstances and provided for by alert management, at least as well in one business as in another in the same field. Except in extreme cases, they do not come in the category of rapidly changing conditions, although they may enter this classification at any time and consequently must be provided for. The nature of changing conditions that are the primary concern of this paper, such as new inventions, new products, the rise of new industries, growing importance of style and color and its spread to new fields, demand changes, creative obsolescence, new methods and types of organization are well known.

Where Will Rapid Changes Occur? A survey of the organization should be made to determine the various factors subject to change, those most susceptible to rapid change, and at what points rapid changes may prove of vital importance to the organization. To do this it is desirable to have some means of assuring that all factors will be considered, and then their relative importance can be judged in the light of the particular circumstances of the case. This can be accomplished in several ways. *One method is to consider the action guides* previously discussed, determine what changes would affect them, and the nature of information needed to keep them in tune with changes. Whenever operating schedules—sales, production, or financial budgets—are used, it is customary to provide for keeping them adjusted to changing conditions. The same principle should be applied to the other action determining factors. Thus, each policy, standard, operating schedule, etc. would be considered from the angle of what and how changes would affect it and what information should be obtained, both to enforce it, and to determine when it should be adjusted. Then, for the personal factors, the type of information required by each executive should be determined so that it could be furnished to them. To some extent this method of procedure is used by nearly all firms, although it may not be carried out in the methodical and comprehensive manner just described. Our survey showed that in organizations having a centralized division concerned with furnishing information about changing conditions the regular practice is to solicit from executives the type of information they desire. In fact, in most cases the procedure went farther than this and attempted to anticipate the information that each executive would need, to be able to furnish him with it.

A second method is to consider each of the major functional divisions of the business and build the system of intelligence along these functional lines. Thus, in the retail field, information on changing conditions would be grouped according to whether it related to the merchandising, store management, control, or publicity divisions, assuming these to be the functional divisions used. In a manufacturing concern, production, distribution, finance, and the various facilitating functions would form the basis for classification. The advantages of this approach are many.

1. In the first place, each major functional division represents a fairly homogeneous group of activities affected primarily by changing conditions of a particular type. For example, the production division is concerned with the application of motion to materials and is affected by technical changes in materials, machinery, and equipment, and production methods or processes; whereas the distribution end of the business is concerned with moving goods to the customer and is affected by changes in consumer demand, the structure of the distributive system, and similar conditions. It is of course not meant to imply that production and distribution can be considered as distinct and unrelated divisions of a business. The two are interrelated and must work together.

2. The second advantage of this plan lies in the fact that the business is already organized and operating according to these functional divisions, consequently it should be guided in terms of these operating units.

3. A third advantage is that techniques of management of the functional divisions, and specialized knowledge of each, have already been built up, such as sales management, scientific purchasing, and production management. This knowledge might as well be utilized. That the plan is satisfactory is born out by the fact that it is used by some of the leading management and research groups, especially, but not exclusively, in the retail field.

In both of the plans just discussed some particular business is used as a starting point. *A third plan is to consider the factors common to all lines of business* and determine those entering into the phenomena known as changing conditions. To go back to fundamentals for a minute: every business is endeavoring, under certain social and economic conditions, to provide goods or services to its customers, usually in competition with other companies, and at a price that will return a net profit. In doing this it must work with an organization of materials, equipment, methods, men, and money. One, any, or all of these factors—economic and social conditions, product or service, customers, competition, price, materials, equipment, methods, men, and money—may vary and make adjustments necessary by the company to meet the new combination of factors. Taken together, changes in these factors make up what we mean by changing conditions. They are the elements common to all businesses in considering the problem of meeting change. Even when one of the two previous plans is used it will usually be found that the changing conditions considered are changes in one or more of these factors. Consequently, this grouping, or classification, of factors will be used for illustrative purposes in the remaining discussion of what changes to look for. There is no implication of superiority of this grouping, but like all classifications it serves a useful purpose. The important thing is to conduct

a thoroughgoing survey of the organization according to some comprehensive plan, determine the changes to watch for and the relative importance of each to the particular business under investigation.

Changes Arising from Competitors. In considering the nature of some of the changes to look for, the differences in viewpoint of various readers should be taken into consideration. The discussion is intended merely to be illustrative and not all inclusive. Most of the changes that take place with reference to the product or service will come from competitors. The ingenuity of American business men in developing new products and services in hitherto unsuspected directions is proverbial, and careful watch should be kept for these developments whether they come from competitors or others. As illustrations of new services in distinctly service industries witness the introduction of the "talkies" and later the "pee wee" golf courses in the amusement industry. For new services merely as business getters, recall department store history with its long list of services, and similar cases among the other retail types. As to new products, the radio is probably the classic example. Other changes with reference to products may relate to variety or simplification, characteristics such as quality, design, color, type of container, and similar marks of differentiation.

Changes in Economic and Social Conditions. Rapid changes in economic and social conditions are only too familiar. Mention has been made previously of the changes ordinarily watched for, namely, growth trend, business cycle, and seasonal variations. Additional changes of a local or sectional nature should also receive attention, as well as conditions within a particular industry. These are not usually too rapid to be adequately provided for by alert management, but may become so at any time. One part of the picture, particularly, is deserving of considerable attention. This is to watch the action taken, or policy followed, by certain groups, such as the Federal Reserve Board, Farm Board, etc., which may precipitate a marked and rapid change in economic conditions. The best laid plans of business founded on studies of economic trends may suddenly become obsolete unless the work of such agencies is taken into consideration. Of course a really adequate trend study will take these influences into account. Then there are such factors as new legislation, court decisions, activities of the Federal Trade Commission, Interstate Commerce Commission, and similar bodies to be considered. Changes brought about by a widespread adoption of certain products such as the automobile or radio will often have important implications. And finally, social changes in the nature of changing public opinion, violent changes of an emotional or mass psychology nature should be considered.

Changes Due to Customer. Not long ago some enterprising individual discovered a new force in business, the customer, and since then the wheels of industry have revolved about the changing demands of its new ruler. Today the customer is king. No truer statement was ever made. Consumers' preference, in a buyers' market such as business is in at present, is not something to be toyed with, patted affectionately, and then thrown into the discard, as many companies have discovered to their own sorrow. It must be respected, studied, and catered to. Probably the rapidly changing conditions of most fundamental importance that are taking place today are directly,

or closely, associated with the customer. Someone has well characterized present-day conditions as a "buyers' renaissance."

In taking up a discussion of changing conditions relating to the customer it should be noted that there are at least three distinct groups or classes of customers: *purchasers of industrial or producer's goods or services; commercial purchasers of goods or services for resale; and the final consumers.* Usually customer changes studied in any of these groups will be viewed from one or all of the following angles: changing type and amount, changing status, and changing demands. Management wants to know changes that are taking place in the *type and amount of customers* a firm has. Is the number of small buyers increasing at the expense of large buyers, and why? Or is the reverse taking place, indicating possibly a more economical distribution, or possibly a dangerous concentration of accounts? Is the firm losing or gaining customers, and why? Is the type of customer changing? What will be the probable effect of this change, desirable or not? These and similar questions management should at all times be able to answer. Then changes take place in the *status of customers* that deserve consideration. Changing purchasing power may necessitate changes in price lines or price levels at which the company sells. Changes in standards of living have been taking place more rapidly in recent years, but could hardly as yet be classed as rapidly changing conditions. They may make advisable changes in marketing methods—selling a product as a staple instead of as a luxury—or variations in advertising appeals and media used. More rapid changes in the status of individual customers is likely to take place in regard to items like credit. The numerous safeguards established by business to guard against credit "skips" and bad check artists bear witness to the need for prompt action in dealing with this problem.

Changes in *customer demand* are the ones receiving, and justly deserving, the lion's share of attention today. Demand changes may refer either to the product or to auxiliary services. In analyzing these changes it seems advisable to consider each of the three groups of customers separately. Demand changes from industrial customers often take the form of demands for new types of machinery and equipment to suit new needs, new methods or processes of production, new types of power, and even new industries. In selling to commercial customers mainly auxiliary service demands are likely to be encountered, such as demands for more rapid deliveries, opportunity to get goods in smaller lots, and resale assistance. The first two are manifestations of a phenomena to be considered later: speeding up processes all along the line to keep inventories in the most fluid and flexible state possible. Witness the hand-to-mouth, or small-order, buying policy so popular today. The demand for resale assistance, or selling for, rather than selling to, the customer is indicative of the shifting functions of manufacturer and distributor, the former assuming more of the responsibility for demand creation, the latter concentrating more on the physical handling of commodities. In so far as changing demands of this group relate to the product they are reflections from changes in demand of the consumer, and consequently will be dealt with there.

Any consideration of changing consumer demand must recognize at the outset the tremendous and growing importance of women as purchasers of consumers' goods. Mrs., or Miss, Consumer is the keystone in the arch between production and consumption. Without her support no business can hope to survive in this field. She is the source of more demand changes today than probably all the other factors combined. Consequently her likes, dislikes, and other characteristics will repay careful study. It is no longer possible to initiate sudden style changes and tell the consumer to like it. Rather is it necessary to study her likes and needs, and construct products and services to fit these requirements. Hence the modern stylist, as an integral part of an organization dealing in style goods. What applies to style changes also holds good for consumer preferences for color, line effects or design of product, packaging or container, and types of auxiliary services offered. Today the customer is looking more for total effects than to price and quality, taking these for granted. Witness the popularity of the ensemble idea, the trading up movement, the demand for quality and style at a reasonable price. All these preferences must be given due recognition. It would be difficult to even indicate the numerous ramifications which demand changes may take, but sufficient has probably been said to signify the necessity of giving this point the most careful attention.

New Phases of Competition. Recognition of the need to cater to the customer, coupled with a tremendous increase in productive capacity in proportion to increased demand, have introduced new complications in the nature of changing conditions in respect to competition. In attempting to cater to the customer, to entice her away from competition, or to secure a greater share of her expenditures, business has flooded the market with a never-ending array of new products and services, style changes, novel selling schemes, and no end of variety and change. A new technique, creative obsolescence, has been introduced along side of, and supplementary to, its big brother mass production. Intercommodity and interindustry competition have made their appearance. Consequently, we see the rise of competition of a new type that must be taken into consideration in formulating plans for changing conditions to be observed. Some of the things to be considered with reference to changing competition are: the increase or decrease in its amount and severity; changed character of competition, whether more aggressive or more conservative, more intelligent or blinder competition, totally new competition either from new companies or in the nature of intercommodity or interindustry competition. Another type of change that many companies have experienced is to find themselves competing with their own customers, although this is less likely to be a rapid change excepting in cases of sudden alteration in policy. And finally, changes in competitors' methods and policies in all directions should be constantly observed.

Price Changes. Rapid changes in price are common and must be reckoned with. Change in the general price level, prices of the particular commodity or service, and competitors' prices are the points requiring consideration. Obviously price trends in these items should be carefully followed.

Changes in Materials. Changes in the nature of materials are of great importance in certain industries, and often take place so rapidly as to have

almost revolutionary effects. Witness the rise of rayon, lumber substitutes, rubber and textile substitutes, and the whole procession of synthetic products, utilization of wastes, and by-products. Many industries frankly admit these changes to be the greatest source of trouble with rapidly changing conditions. In fact, no industry today is safe from rapid changes in its basic materials, which may even alter the whole nature of the industry almost over night, force it to seek new markets, develop new uses for its product, or make fundamental changes in productive or distributive processes and methods. Consideration should also be given to changes in sources of supply, quality or specification changes, new uses for old materials, and changes in serviceability of materials.

Changes in Equipment, Methods, Men, Money. Equipment changes, while usually less drastic than changes in materials, may be quite important. In manufacturing they usually center around production requirements, scientific discoveries, new processes or methods, new sources of power, developments of mass production and scientific management techniques, and other production improvements. New and improved machinery and tools should be considered. In distribution, equipment changes converge on the modernizing movement in retailing, and on mechanical or more efficient handling in wholesaling. Style and art factors also enter in to some extent, particularly in the retail field.

Changes in methods and processes are taking place in practically all departments of business. Improvements or refinements in old methods, as well as the introduction of totally new methods deserve attention. New methods of distribution, of advertising, of production, of retailing, and of all activities of interest to a particular business should be considered.

Not much need be said about men as a factor in rapidly changing conditions. It is true that the calibre, education and training, aggressiveness, and similar qualities will vary and may in unusual cases—such as a change in personnel at the head of some agency which has a widespread effect on business conditions—be the cause of rapid changes. However, while this factor is of the utmost importance to business in other considerations, it need not detain us longer in this connection.

The money factor enters in some form into all business transactions. Rapid changes in this factor may be of great significance. Changing interest rates, changes in sources for securing funds, credit conditions, state of the money market, and numerous other things require attention.

Sources of Information on Changes. After a survey has been made and the type of changes to watch for or information about changes required has been determined, the next thing is to locate the sources from which this information may be obtained. This is another subject that can receive but scant attention in proportion to its importance in the present discussion. Since, however, the purpose is to indicate a technique rather than to present an exhaustive treatment of its application, what is given here will suffice for this objective.

Internal Sources of Information. There are two major groups of sources from which management can obtain information on changing conditions, namely, from within the organization itself or from sources external to it.

Within the organization there are numerous sources of recorded information, records and reports of operation, correspondence, etc., which when analyzed will often give notice of changes. A considerable part of the work of certain staff departments, such as the statistical, research, and accounting departments, is concerned with compiling and analyzing this material. Records and reports of operations should be presented to show trends, and whenever possible, in a way to make them readily comparable with data from external sources. In addition to the ordinary company records and reports on operations, much significant information can be obtained from analysis of the company's experience at points of contact with its customers, such as from the salesforce, adjustment or complaint bureau, returned goods records, and customer correspondence files. Another internal source of information is the knowledge and experience of executives. Every effort should be made to utilize this source, and by means of conferences, suggestion systems, or some other method, stimulate an interest on the part of executives to furnish all possible information on changes. However valuable the analysis of internal data may be, it does not tell the whole story. Rapidly changing conditions cannot be successfully watched by this method alone, as they will not be apparent in records of operating results or other reports until conditions have changed sufficiently to cause their effects on the company's activities to be reflected back through these records. It may then be too late to make the needed adjustments. The knowledge of executives may at times be somewhat better than analysis of operating results, but it is never safe to place sole reliance on internal sources of information.

External Sources of Information. The external sources of information are almost unlimited. They may be roughly classified as unorganized and organized sources. Unorganized sources usually require direct collection of the desired information by means of surveys, observation, or other special investigation. However, there are so many organized sources of information in existence today, that, with the possible exception of consumer surveys, the needs of management can be supplied from one or more of these sources. Just as the work of collecting and handling information in the individual business has been largely specialized in certain staff departments within the company, so has this work for business as a whole been specialized and conducted mainly by certain groups which may be referred to as the outside staff of business. There are many of these staff groups; the more important ones for our present purpose are the following:

Trade associations and trade institutes.

Cooperative management and research groups.

Government bureaus and agencies.

Statistical and forecasting agencies.

Associations:

Professional associations: management, etc.

Functional associations: purchasing agents associations, etc.

Universities:

Bureaus of business research.

Individual research.

Chambers of commerce and local associations.

Miscellaneous sources.

Value of Trade Association Work. Trade associations and trade institutes are probably the most valuable all around sources of information on changing conditions. They have largely taken over from the individual business the responsibility of watching for changing conditions, keeping their members posted, and suggesting remedies. All changes of an economic, legislative, social, and technical nature that affect the industry are observed and reported on. Reports are made on general business conditions, conditions within the industry, new legislation and proposed legislation, new inventions, discoveries and progress of technical developments in the field, changing competition and consumer demand. Often style trends, new methods, materials, machinery and equipment, and other topics of current interest are discussed at conventions and reported to members. Nearly all trade associations report on operating results of members. Many maintain complete libraries on subjects of interest to members, such as the library on fermentology of the American Bakers' Association. Some have even added field men to their staffs whose work is to study changing conditions in the industry at first hand and help members in the solution of their problems of making such adjustments as may be needed to meet these new conditions. Market and technical research and trade extension activities have come to be some of the most important activities of this group. In some fields, such as banking and certain retail fields, special committees have been instituted by the trade association for the sole purpose of watching for rapidly changing conditions and assisting members in meeting them.

Cooperative Research Groups. Cooperative management and research groups have been formed by selected groups of companies in many fields, such as the Retail Research Association and Associated Merchandising Corporation in the department store field. These groups usually have a well-organized system for keeping posted on all phases of rapidly changing conditions of interest to members and suggesting, or even dictating, adjustments that members should make. A somewhat similar arrangement consists of the more or less loosely organized tie-ups between manufacturers and their retail outlets. Here information on changing conditions can be furnished both ways, the retail outlet giving the manufacturer closer contact with changing consumer demand, and the retailer securing information of greater value to him because of the pooling of experience from many sources. In addition to these two major types within this classification, there are numerous agreements for pooling information and experience, cooperation in conducting technical or market research, and exchanging research and operating information. All this, when properly handled, can be of immense value in solving the problem of watching for rapidly changing conditions.

Statistical and Other Trade Information. The valuable assistance now being rendered to business by the federal government furnishes an important source of information on changing conditions. Much of this work, such as the Louisville Grocery Survey and National Retail Credit Survey, is instigated at the request of, and often conducted in cooperation with, trade associations in the field. Bureaus and departments, such as the Census Bureau, Bureau of Standards, Bureau of Mines, Bureau of Foreign and Domestic Commerce, Bureau of Labor Statistics, Department of Agriculture, etc., are continually

collecting and publishing information of value in this connection. Publications such as the *Survey of Current Business*, *Domestic Commerce*, *Commercial Standards Monthly*, *Bulletin of the Federal Reserve Board*, and publications of the Federal Trade Commission and similar bodies provide a mine of information for business.

Organizations furnishing statistical and forecasting services concerning general and special business conditions are almost legion. Some of the better known examples of concerns in this field are: the Alexander Hamilton Institute, Babson Statistical Organization, Brookmire Economic Service, Harvard Economic Society, and Thomas Gibson. Many banks, trust companies, and other business firms publish similar studies, such as those of the Chase National Bank of New York, Cleveland Trust Company, Guaranty Trust Company, Irving Trust Company, National City Bank, the Federal Reserve Board previously mentioned, and the various Federal Reserve banks. In many cases the activities of university bureaus of business research include this type of work, especially that covering conditions within the state, as for example, the Georgia Bureau of Business Research, and the Bureau of Business Research of Ohio State University.

Publications of professional associations, such as the American Management Association and others, provide an especially valuable means of keeping abreast of changing methods and management technique, as well as other valuable data on changing conditions. Functional associations, such as purchasing agents associations, credit managers associations, etc., are especially helpful in providing information on changing conditions affecting their respective fields of activity.

The universities and colleges with departments of commerce, economics, schools of business, or similar departments are valuable sources of information on changing conditions. Whenever an organized bureau of business research exists it will care for much of this work. A wide range of subjects is covered by the activities of these bureaus. These may be divided into two general classes: first, reporting data of a regular or recurring nature on general business conditions, conditions in fields of peculiar interest to business men of the state, and of operating results of local business firms, such as data on sales, stocks on hand, rate of turnover, expense items, and a host of similar operating measures of local conditions. These data, along with announcements of special studies, are usually published in a monthly bulletin. Second, special studies of problems of current interest or importance, such as retail mortality, retail practices, credit problems, methods and policies of manufacturing or merchandising of certain commodities, studies of trends in various fields, traffic problems, housing conditions, wage and unemployment problems, and many others. At present there are some twenty-seven bureaus of business research in the various colleges and universities of the country, representing nineteen different states. This is in addition to the institutes and foundations located at many universities and also concerned with research on industrial and economic problems. About half of the university bureaus of business research publish a bulletin, or similar publication, at regular intervals, in addition to the publication of reports of special studies. The business located in a state having an active university bureau of business

research may obtain valuable assistance in meeting changing conditions by cooperating with it and utilizing its services. In addition to the work of the bureaus of business research, many valuable studies are made on changing conditions, trends in the changing factors, and similar research topics by individual members of the faculty and graduate students.

Chambers of commerce and local merchant and manufacturers associations usually provide information on local developments and changing conditions of a nature pertaining to basic industries or fields of the locality. Of course the state and national associations in this group cover problems of more general interest, but are too familiar to need further consideration here. Numerous other sources could be mentioned, such as trade journals, newspapers, clipping services, service bureaus of manufacturers and wholesalers, market research agencies, style forecasting agencies and others which will no doubt occur to the reader. Enough has been said, however, to show that there are plenty of sources from which information on changing conditions can be obtained. The real problem seems to be the effective utilization of this material.

Provision for Use of Information on Changes. With a knowledge of what changes to look for and where to secure the necessary information determined, attention may be directed to making provision for a smooth flow of this information from its source to the various points of utilization within the organization. That is, definite responsibility should be established for securing the needed information and routing it to executives or committees according to their needs. This is a staff function and is usually performed by one of the staff departments. It is a function distinct from that of utilization of the information by line executives, either in carrying on their regular duties or in making adjustments in the impersonal factors required because of changed conditions. Nevertheless, it is so closely associated with adjusting the business to new conditions that both problems will be somewhat merged. The importance of following a systematic procedure in handling this activity would be hard to overemphasize. It is needed to insure that all information required is obtained; to insure a proper distribution of this information to those who are to use it; to relieve line executives of the responsibility of this staff work; to insure prompt notification and speedy action when required; to eliminate waste motion and duplicate work; to avoid overlooking warnings of changing conditions and to make certain of proper interpretation of trends and unusual conditions; and finally, to insure a proper utilization of the company's organization, and to make a knowledge of changing conditions available to all members of the organization.

Decentralized Plans. Our survey showed several plans in use for handling the gathering and using of information on rapidly changing conditions. One group of plans operated on the principle of decentralized responsibility. Three characteristic plans were found in use here.

1. In one, each department head and other executive concerned was left free to secure his knowledge about changing conditions wherever he could. In some cases trade journals were subscribed to and circulated among executives, but no additional provision was made to keep them informed.

2. A second plan was to hold frequent meetings of executives, department heads, field men, and others, to discuss changing conditions and adjustments that might be needed.

3. The third plan was to place responsibility for supplying information with the various functional divisions of the business, primarily the research and statistical departments, control or accounting division, sales division, and production department. Assistance from outside specialists was also used. Information from all of these sources, together with recommendations for adjustments needed, was furnished direct to a committee on adjustments, and the latter made the final decision on what action should be taken.

Centralized Plans. The plans which operated on the principle of centralized responsibility for collecting and distributing information relative to changing conditions either centralized the responsibility for this function in a division of one of the cooperative groups, or in some department within the business. This was also handled in three different ways.

1. According to one plan a special committee of the trade association, a sort of analysis and research committee assumed the responsibility for keeping posted and recommending adjustments needed to members. This was found in the banking and other fields. Suggested adjustments are not compulsory for member companies, although the advice of this committee is highly valued and usually acted upon. The committee has the definite responsibility for collecting all information on changing conditions and keeping member firms posted. Suggestions for adjustments needed are based on an analysis of information gathered, and often special research or investigation into the problem initiated by the committee.

2. A second distinctive method of handling information cooperatively was found to be through a central department of a management and research group.

3. The third type found resembled the second. It was a pooling of information by competitors, excepting for the more highly organized manner in which it was conducted. In a few cases the central division of the management and research group had the authority to require that adjustments suggested be made by members. All three of these plans operate on the principles of centralizing this function of collecting and distributing information, and of increasing the range of activity and value of the service by cooperative efforts and specialization of the work.

The Central Information Department. The remaining method found of handling the problem was to centralize the function in some staff department of the company's organization, such as the research or statistical department, but more commonly in the company library or a central information department which usually had jurisdiction over the company library. This department then acted as a clearing house for all information both from internal and external sources and maintained files of all information on changing conditions. The usual organization of such a department is to have it in connection with the company library and information files. It may or may not also be the research department. In any case it works in close cooperation with the research, statistical, and other similar staff departments. All trade journals in the field are subscribed to and go first to this department, as does all other

information on changing conditions, whether from trade associations and other outside staff groups or from the various internal sources of information. A suggestion system is maintained which solicits ideas and information from executives. The information once centralized is classified and routed to the points of utilization within the organization. Executives are requested to furnish the information department with a list of subjects upon which they desire to keep posted. The department also endeavors to anticipate subjects upon which executives and committees will need information and provides it for them. In some cases notices are sent to executives informing them of receipt of information in which they may be interested. In other cases clippings, briefs, bulletins, or even the telephone may be used to notify them. One practice in dealing with articles in periodicals is to send the entire magazine to the executive, who then reads and returns it. Later all articles are clipped and filed serially and cross-reference index cards made out. One of the large oil companies maintains a file of over twenty thousand different articles, cross-indexed by subject and source. Often as many as twenty different reference cards are required to make information readily available. When information requiring analysis is obtained it is usually referred to the statistical department first, analyzed, and returned to the central information department, from which it is routed to executives as previously described.

Summary of Essentials for a Fact-founded Operating Organization. In formulating plans to provide for a smooth flow of prompt and reliable information on changing conditions there are many things to be considered. If the trade association in the field provides such a service in the form of a special committee for this purpose, it should certainly be used, although not to the exclusion of proper provisions being made within the company's own organization. This also applies in case the company is a member of some cooperative management and research group which furnishes this service. In some cases it may be desirable to establish a separate staff division handling this function exclusively for one department, such as a style bureau under the direction of a competent stylist. For style information cooperative action, such as through the trade association, is also essential. In general, however, it seems desirable to centralize the responsibility in the hands of a competent individual or group, a staff department organized for this purpose. This should be in connection with the company library and work in close cooperation with the research and statistical departments. All information relating to changing conditions should go first to this central information department and then be routed to executives or committees who are to use it. If necessary, it should first be referred to the statistical department for analysis and interpretation. That of value should eventually be filed in the central information file and be available at any time to all executives. In some cases it may be desirable to classify data according to whether it represents normal growth or rapidly changing conditions. Priority should always be given to information on changes which may necessitate prompt action on the part of executives. Assurance that information is properly utilized should be obtained by requiring that those receiving it report back stating receipt of information and what action was taken on it. If suggested adjustments are

also offered a similar procedure should be followed, coupled with the requirement for an explanation of reasons why, in case the suggestion is not acted upon. Contact should be made with all available sources of information needed. Full utilization should be made of the company's own facilities for supplying information on changing conditions. The public relations department can report on changing public opinion; the sales division and field men on changing conditions in competition, customer demand, new developments, etc., and the statistical and control divisions on analysis of the company's records. Every effort should be made to train executives to be alert for changing conditions and to cooperate by reporting their knowledge of developments. It will often be found desirable or even necessary to have scouts or field men studying changing conditions at first hand. Consumer surveys and other research should be conducted whenever it seems desirable. With proper provisions established for utilizing facilities within the organization attention should be directed to external sources, and contacts set up with every available source for the information required. Naturally trade journals and trade association publications should form the backbone of the system of external contacts. These groups are specialists in this work. Utilization of the remaining outside staff groups will depend largely upon the needs in each particular case. Obviously, in a small business it is not necessary to have an entire department devote its attention exclusively to furnishing information. However, even here, a definite placement of responsibility for this function should be made, preferably assigning the duty to the manager's assistant.

Forecasting and Anticipating Rapidly Changing Conditions

This is the second major division of management technique required to meet rapidly changing conditions. It is often of vital importance. While it may not always be possible to foretell accurately what changes are going to take place, it is often possible to anticipate them to some extent and be prepared for the emergency by having alternate plans developed and held in reserve should certain likely changes take place. Then, the mere fact of attempting to forecast or anticipate changing conditions tends to develop a forward-looking attitude among executives making them more alert in watching for changes and better prepared to respond quickly to the new conditions.

The Flexible Budget. The forecasting of measurable factors of a business, the operating results, by means of budgets or operating schedules is an accepted practice of good management today. In the preparation of the program for budgetary control conditions that will affect its operation are estimated as carefully as possible and taken into account in formulating the program. Once the program is formulated, it is still necessary to keep a close record of its value as a guide for the business to follow. Conditions affecting it may, and frequently do, change from what it was estimated they would be. Consequently, it is necessary at times to adjust the budget to take account of changes, and the idea of the flexible budget has been developed to facilitate this adjustment. The flexible budget is analogous to the alternate plans that can be developed and held in reserve by management to be

better prepared to meet changing conditions in other departments of business activity, changes that are likely to take place but not at all certain.

Business Forecasting. Somewhat the same technique that is applied to budgetary control of operations can be, and is being, applied to forecasting and anticipating changing conditions in general. It involves a careful analysis of causes determining existing conditions; forecasting trends in the changing factors; carefully watching the course of underlying conditions that determine the trend to anticipate the effects of any probable changes; and finally, the development of alternate plans to meet changing conditions likely to take place. It is based squarely on the study and prediction of trends, and consequently we see the great interest that is displayed today in the subject of trends. Books and articles are flooding the market on trends in this, that, or something else. We can read on trends in retailing, trends in consumer buying motives, trends in color, style, art, or whatever we wish. This trend study is occupying an important place in present-day management. It is probably the newest, as well as one of the most potent, tools in the kit of management technique for meeting rapidly changing conditions. It is certainly worthy of closer examination. In trend studies we are interested not only in knowing that a trend is in a certain direction, but also we seek to discover the forces that influence or cause the trend to be in a particular direction, in order that these forces may be used as barometers to give warnings of coming changes.

Analysis of Trends. A trend is a general course or direction. But toward what? What is the objective or goal toward which the trend is directed? Once we know that we have valuable knowledge to use in predicting the future course of events. It will usually be found that a general goal or objective exists toward which trends in a certain group of activities are directed. The path toward that general goal, however, is ordinarily not a simple straight line of progress but may wander around a bit, branch off into two or more separate courses, and yet all continue in the general direction of the principal goal. That is, any major trend is likely to be made up of numerous minor trends, all headed eventually toward the same objective but frequently taking divergent courses in the process. This is caused by the complexity of conditions or forces entering into the determination of any trend or trends. Also, one or more powerful influences may run counter to the general goal of the trend and succeed in temporarily retarding its progress in this direction, or deflect it into new channels. For example, a trend toward more completely satisfying consumer demand for variety in a given line by a multiplication of products may be carried too far and be subject to pressure from the simplification movement. This may check the rapid multiplication of needless variety yet not destroy the trend toward this general objective. Other factors may enter in, such as demand for variety in color, design, and price, which will set up several trends all directed toward greater variety but along slightly different lines. Another example might be cited in the case of trends in types of retail organization. The general goal or objective is economical mass distribution to accompany mass production. The major trend has been toward the so-called "chain store" type of organization. Yet other factors, in addition to the desire for economical mass

distribution, have influenced the trend, and we see it deflected toward a modified form of chain store type of organization; and also other trends in types of organization such as the so-called "voluntary chain" have arisen. Yet, these trends have the same general objective, although influenced by somewhat different conditions and taking divergent paths in seeking this objective.

Numerous additional illustrations could be given, but probably enough has already been said to illustrate the points that it is desired to emphasize, namely, that a study of trends in any field will usually show some major goal or objective toward which they are all more or less directly pointed, and that many other factors or conditions influence the trend and may temporarily divert its course or cause it to break up into several separate trends, and yet not destroy the principal goal or objective. This shows how important it is in trend studies to determine two things: first, the *general goal or objective of the trends*; and second, the *major conditions or factors influencing the trends under consideration*. When we know these two things about a trend we are in a position to deal fairly intelligently with the problem of anticipating and forecasting rapidly changing conditions in the field being considered. It will facilitate a more rational interpretation of trends, and lessen the danger of confusing disturbances produced by the other influencing factors with fundamental changes in the trend. Take the problem of rapidly changing consumer demand for style goods. If we know that the general goal of trends in this field is toward commodities that will more completely suit the needs of the user, and is not merely change for the sake of change, we have knowledge that will enable us to avoid many mistakes and to anticipate more accurately the course of future changes. Changing needs of the consumer can be studied and will act as a barometer of changes soon to be expected in style trends. The work of the modern stylist illustrates this point. This also shows the value of making consumer surveys in attempting to anticipate changing consumer demand. Often research through consumer surveys will show, on the basis of facts and not opinions, trends in demand or buying habits of which the consumers themselves are only vaguely, if at all, conscious. If, in addition, we know certain of the major conditions that will influence these trends, such as, for example, the limits within which changes are desired, —that they must be in the direction of the present renaissance in modern art, and work within certain limits of color and line effects—we have fairly definite guides to follow. Then we may also know that certain other factors will have a pronounced and immediate effect on consumer demand, such as lectures by noted authorities, activities of consumer educative agencies, advertising, news items, and particularly, in certain fields, announcements of discoveries such as that of vitamins. Each of these factors can be studied to determine the probable effect changes in it will have on the trend. Then observation of the progress of these influencing factors will act as barometers of changes which may soon be expected in the trend. In fact, whenever it is possible to determine the conditions bringing about or influencing demand in a particular field changes in demand can be forecast by following the developments of these influencing factors. Thus, building permits and construction work act as barometers for demands for electrical goods; peoples' habits of

living, for demands in consumers' goods, such as the recent change to lighter kitchens and resulting demand for light-colored kitchenware, or widespread interest in sports and resulting change in type of clothing demanded; or technical developments may act as barometers for demands for industrial equipment.

The forecasting and anticipation of changing conditions in the other factors may be conducted in the same way. If we know that equipment changes follow the general trend toward mechanization in industry, having as a goal or objective lower production costs and greater control over productive processes, we have gained one point in handling the situation. If it can also be determined that certain other factors influence the trend, such as the attitude of labor, desire for simplicity or beauty in design, new discoveries of the physical sciences, or of the science of management, we have additional barometers to use in predicting changing conditions in equipment. A similar analysis should be carried out for the other changing factors to locate important barometers to use in forecasting changes. In line with this type of approach, every effort should be made to forecast changing conditions of importance, making full use of trend analysis in the process. Careful record should be kept of the progress of, or changes in, the influencing factors and their probable effects taken into account in the forecast. As it becomes more and more certain that a predicted change is likely to take place, plans can be developed and held ready for use at the proper time.

Maintaining a Sensitive and Flexible Organization Readily Amenable to Change

Organization for Deciding on Adjustments. The third and final major division of the technique of management required to meet rapidly changing conditions is to maintain a sensitive and flexible organization readily amenable to change. To do this it is necessary to keep the entire organization in a healthy condition, have alert and well-informed executives with the proper attitude toward changing conditions, and establish definite authority and responsibility both for making such adjustments in the organization as may be necessary, and for providing a flow of prompt and reliable information concerning changes. Our survey showed at least four methods of placing authority and responsibility for making adjustments in the organization. In some companies, especially the smaller ones, only the *chief executive* has this authority. In a few cases adjustments were made only on orders from a *central committee on adjustments*, or similar body, which might be made up of the company's executives or be a committee of a management and research group to which the company belonged. In many cases adjustments in the organization were made only after *conferences of the various executives concerned*. The most common method, however, was to have authority for making all needed adjustments *centered in the line executives at the various levels of organization authority concerned*. That is, adjustments affecting only one department would be made by the line executive in charge of that department. If it affected more than one department it would be decided upon by

the next higher executive coordinating the departments involved, and usually only after conference with the heads of all departments affected. Adjustments of major importance, affecting the entire organization, often require authority from the board of directors or executive committee, but may be made in emergencies by the chief executive. In practically all of these cases it was customary for *the department charged with the responsibility of providing information on changing conditions also to suggest or advise what adjustments should be made.*

Maintaining Flexibility for Making Adjustments. In addition to toning up the sensitivity of the organization to respond to changing conditions as just described, it is necessary to insure a proper degree of flexibility, or ability to make the needed adjustments. Three factors in particular deserve attention: the physical factors, personnel, and organization structure. The rate of obsolescence in machinery has reached a point in some cases where management will not introduce a new machine unless it will pay for itself in from one to two years. In other cases changes have taken place so fast that it has been found desirable to use more general purpose machines in place of the single purpose ones formerly used, even at some sacrifice of operating efficiency. These two illustrations show the need for flexibility in machinery: keeping the *investment in machines in a more fluid state*, more capable of being changed in purpose to suit new conditions. Similar observations hold true for the other physical factors of plant and equipment. In another group of physical factors the need for flexibility is even more pronounced, namely, with reference to *investments in materials and merchandise*. This is apparent in many ways: the hand-to-mouth, or small-order, buying policies; closer inventory control; speeding up the process of manufacture and distribution so that investments in materials or merchandise will remain in a state not subject to change for the minimum amount of time. Of course other factors, such as economy of investment, also play a part, but the real pressure is to keep investments in as flexible a condition as possible, and be ready to meet rapidly changing conditions whenever they arise. *Flexibility in the factor of personnel* may be obtained by diversifying the training and experience of employees making it easier to shift entire groups from one class of work to another without loss of time or operating efficiency. In some lines especially subject to sudden changes in the demands made on different departments the flying squadron idea can be used. *The third factor to be kept flexible is the organization structure.* Several plans have been developed to meet this need, and many differences of opinion exist on the subject. Probably in certain cases the small department idea, permitting of rapid expansion or contraction of any division by merely multiplying the number of similar departments, using assistant department heads as managers of the new departments, will be as effective as any. There is much to be said in favor of a properly functionalized organization in securing flexibility of structure by the shifting of functions, or units of organization activity, to different executives according to changing demands made upon the organization. This refers to organization for operations on a functional basis, not to functional control, which is more likely to be highly inelastic. All of these methods of obtaining flexibility will be greatly enhanced in value if an adequate system of anticipating and

forecasting changing conditions provides management with some advance notice as to what it may be necessary to anticipate.

Methods of Deciding What Adjustments to Make. With regard to the methods used in deciding what adjustments should be made in an organization, there are at least three that were found sufficiently often in use to deserve mentioning. They are:

1. Study of the methods of successful competitors, particularly of the leaders in the field, will often show that they have already taken steps to develop a solution to the problem. Many times their experience can be profitably adapted to use by another concern with the necessary modifications.

2. Experimentation, based on adequate research, and carefully checked by watching the results on a limited scale at first will often prove to be an effective way of meeting new conditions.

3. Many problems are of such a nature as to permit a pretesting of proposed solutions in the research laboratory before attempting to put them into operation in practice. Numerous instances could be cited where companies have anticipated and forestalled difficulties by this method that were not apparent upon first consideration of the solution.

Summary. The technique of management required to meet rapidly changing conditions may be briefly stated as follows:

The organization must be operated on a basis of facts, by keeping all factors that determine the type of action it will take in tune with changing conditions.

Definite responsibility should be placed, and a systematic procedure adopted, for supplying a regular flow of prompt and reliable information to executives and committees charged with its use, making full use of both internal and external sources in securing this information.

Every attempt should be made to forecast and anticipate changing conditions by means of trend studies and similar aids, and a close watch maintained on conditions likely to produce changes of importance to the company.

Executives should be trained to keep alert for changing conditions.

And finally, the organization should be kept in a healthy state, sensitive to change, and flexible enough in all parts—physical factors, men, and structure—so that it may be readily adjusted to new conditions as they arise. There is plenty of information available today on changing conditions, and a knowledge of the technique of using it is developing continuously. Management can best meet rapidly changing conditions by operating on a basis of facts, using such technique as has already been developed, while striving constantly to improve it.

CHAPTER III

MANAGEMENT CONTROL

ELIMINATING IRREGULARITY OF OPERATION¹

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Fifteen or twenty years ago, periods of seasonal slack and times of general business depression were looked upon almost universally as mysterious catastrophies against which little, if anything, could be done by individual manufacturers. During the past decade, and especially during the past few years, there has been a remarkable change in attitude. While business men realize more than ever the need for intelligent economic action in the matter by the government, the Federal Reserve System, and other outside forces, they are looking chiefly to their own brains and ingenuity to steady their operations; and it is to their credit that already many of them have achieved noteworthy results.

In presenting a summary of the methods used by a wide variety of plants which have been successful in this regard, the usual caution must be urged. No one has a panacea for this problem. To mention a policy is merely to make a suggestion taken from the experience of other concerns. In this, as in all business matters, judgment and careful adaptation to the particular conditions are essential. But it should be noted that only those policies mentioned that have been found practical and are quite generally in use among firms which have reduced the irregularity of production and employment.

Perfect the Sales Side of the Business First. In discussing management's means of regularizing employment first place should be given to the subject of distribution, as more important than the other aspects, production and labor management. Every other method of steadying work or of providing for workers when they are unemployed depends chiefly on the degree of control achieved over demand. When individual manufacturers, alone or in cooperation with others, have acquired some influence over the kinds of goods wanted, the time when they are ordered, the amount desired, and other elements involved, the foundations for marked improvement in the steadiness of industrial operations have been laid. The technique of production planning and of personnel management have already advanced to the point where exact scheduling is possible.

¹ This is a summary of the chapters relating to management methods in Dr. Feldman's book "The Regularisation of Employment," Harper & Brothers. This book was prepared under the auspices of a committee of the American Management Association.

The attack on irregularity of production and employment must, however, come from all three sides. While the most important flank is that connected with distribution, it will avail little if not followed up from the side of production technique and reenforced by those supplementary methods of personnel administration which take care of the working force in the way most suited to the changing business situation.

A. Distribution Policies That Promote Steady Operation. The realization that the sales end of a business may, under proper analysis and treatment, be subject to prediction and perhaps control, is of the utmost importance in the problem of providing security of employment. Henry S. Dennison, a manufacturer who has regularized operation, has stated: "I can say that the principal part of the work of smoothing out that curve of production has been a selling job." Most manufacturers do not seem to have realized this, or to have believed much control possible.

If the important aim of regularization becomes a basic consideration of distribution, some of the modes of action illustrated in the following list, and in use in progressive plants, will be found of aid; or executives will devise others better adapted to conditions.

1. *Market Analyses.* a. Careful analyses of past records and present conditions in order to arrive at accurate estimates of the probable demand for the ensuing year; then planning production and labor requirements on that basis.

b. Investigating the causes of seasonal peaks of demand.

c. Studying the possibilities of developing new uses for products made, so that purchase of products may be stimulated during times of customary slack demand.

d. Seeking out new markets at home and abroad having different seasons, so that these outlets may allow for more regular production; developing a long-time export policy with this end in view.

e. Attempting to forecast cyclical changes in business by detailed studies of intraorganization statistics and those of outside economic conditions.

f. Planning against business depressions by discovering new outlets for goods, by developing new items capable of stimulating demand, or by other expedients.

g. Diagnosing non-cyclical changes of long-time trend and adapting the business to the conditions.

2. *Diversifying the Output.* Adding side-lines, fillers and new products which may be manufactured at different times from the production periods of the main line, thus filling in the customary idle time of men, plant and equipment.

3. *Reducing Excessive Variations of the Same Product.* Simplifying the regular lines of products by eliminating unnecessary variations and changes. (When a firm is producing an excessive number of variations of a product, all having the same seasonal peak, manufacture is reduced to small lots. Production for stock becomes uneconomical and discontinuity of work more likely).

4. *Modifying the Extremes of Style Changes.* Finding practical means of reducing the style hazard—in the shoe industry, in clothing, and other

stylebound trades—thus making manufacture in advance of the period of peak demand possible; this may involve limiting oneself to stable lines, trying to get action by the trade as a whole and other possibilities. It is admitted that this is no simple matter, but here and there individual manufacturers have found their way.

5. *Getting the Consumer to Buy More Regularly.* Removing the obstacles which prevent the consumer from buying during times of normal slack demand; stimulating off-season demand by advertising, by price reductions and by intensified sales activity; enlisting the aid of consumers' organizations.

6. *Securing Orders from Dealers Well in Advance of Need.* Establishing relationships with local dealers leading to their placing orders well in advance of the season, so that production may be begun earlier in the factory; developing special retail outlets, such as chain stores, stock ownership in the firm by retailers, etc., to make distribution policies more acceptable.

7. *Developing Long-range Policies of Business Expansion.* Using a long-range plan of expansion as a basis for determining whether or not it is desirable for the firm to increase its plant, equipment, and personnel when a sudden rush of business occurs, so that extreme fluctuations may be avoided.

8. *Coordinating Sales, Production, and Other Factors through Scientific Sales Planning.* Combining the various sales policies and production requirements into a master sales plan, controlling all the operations of the business for that period of a year, and spreading out the work as equally over the months as the conditions allow; working out scientifically the means by which this master sales plan may be realized completely except for modifications forced by current developments.

B. Organizing Production within the Plant. 1. *Production Planning.* While there are factors in one trade which prevent as steady operation as is possible in others, a good deal of the difference is due to poor organization of production in the factory, more specifically in lack of scientific production scheduling.

The established technique of production scheduling and control has numerous business advantages. Among these are the opportunity to collate orders and therefore to reduce unit cost, and to shorten the time of production, because every element of operation is planned, thus allowing the firm to double or triple its stock turnover during the year and to make better use of the money involved. The following points in favor of production planning, however, seem to have a closer relation to the problem of providing steady work:

a. It enables the executives to have the best available knowledge as to how long ahead the orders on hand will last and how busy the various facilities will be. The firm can thus direct more effectively the efforts of the sales department and, by calling for more business in certain lines, adapt orders to continuous operation.

b. The better knowledge of work ahead makes it possible to know what delivery dates can be promised. Thus the firm may avoid the acceptance of orders that will lead to rush and overtime work.

c. Stock items will be more effectively scheduled. It becomes possible to plan their manufacture when such production will help most to fill up empty

spaces in the factory schedule. Planning also enables firms to avoid manufacturing too much for stock at one time and later having to shut down departments because of this excess.

d. The availability of a picture of the conditions of production months ahead enables the firm to know whether or not it will be advisable to try to get business at cost or at a loss in order to keep the factory busy; and, if so, when it shall get such business and how much of it will be needed. Miscellaneous activities, vacations, repairs, etc. may be postponed to times when an unavoidable slack is likely to occur.

e. A better knowledge of the labor force to be required is gained by such a projection of information and planning. If the future of the firm does not seem bright, the firm can stop hiring workers and effect reductions in the number on its payroll largely or entirely through normal labor turnover.

f. Knowledge of the future conditions of various parts of the factory allows for planning the systematic transfer of workers between departments, and thus for making use of a force of regular employees rather than discharging one group and employing another. Such changes need to be foreseen, because training for the new jobs may be necessary before such interdepartmental transfers can take place.

2. *Manufacturing for Stock.* Manufacturing for stock as a device for maintaining production may be thought of in two different ways. In the first place, there is the planned manufacture of regular stock items at those times when their production fits best into the production schedule. The second form, more commonly thought of by those interested particularly in the unemployment problem, is purposeful production in excess of anticipated requirements for the year, or without a sure market in sight, for the purpose of keeping the organization together until conditions change.

It is important to understand that manufacturing for stock does not require the completion of the whole article in advance. It is quite possible to manufacture only the component parts of a product, leaving the assembly work and finishing processes for the time when the completed article is wanted. Where component parts of a number of different articles are standardized, that allows for the most economical and the least risky form of advance manufacture. To protect itself against merchandise losses a firm should select for manufacturing for stock a product with low material content and high labor content, as wages do not fluctuate as violently as prices of raw material.

3. *Production Research to Eliminate the Weather Factor.* In some instances it is believed that manufacture can not be carried on at certain seasons because of the effect of the weather on the processes involved or on the personnel or on the product itself when it is perishable. But such handicaps need never be accepted as controlling. Brick making, once requiring drying by the sun and carried on only about half the year, was released from the control of the weather by the development of artificial drying. Outdoor construction operations have been held impossible in winter until some one has gone ahead and performed them.

Where the effect of warm weather rather than of the cold is the condition complained of, refrigeration may solve the problem. This was the solution

found by the packers of Dromedary dates. That product, which was peculiarly liable to deterioration, has been improved by chemical analysis and refrigeration, and that has made it possible to put date packing on an all-year basis.

4. *Utilization of the Dull Period.* When all efforts to spread out production have failed to supply the amount of work needed to keep the factory busy, and a slack period is foreseen, the postponement of many miscellaneous activities for the dullest part of the year may be the means of avoiding a lay-off.

Among the activities postponed to slack periods by alert firms are major repairs, special construction work, minor repairs, changes and improvements, and the scrubbing and painting of various pieces of apparatus and parts of the plant. The establishment of a common vacation time for everyone in the firm, corresponding to the slackest two weeks in the year, has been in favor among a number of industrial concerns.

5. *Budgeting the Hours of Work.* When, in spite of all the technique brought to bear upon the situation, seasonal fluctuations do persist, still another means of reducing the need for an outside labor force reserve is worth considering. That is the budgeting of hours of employment, so that an average number of weekly hours is worked during the year rather than a standard number throughout. If, for example, a plant desired to maintain a forty-four hour week, it would be no injury to the employees from a monetary standpoint to work forty-eight hours during some weeks and forty hours in others, on a pre-arranged basis. This plan makes for flexibility of labor forces without recourse to temporary hiring from the outside, and thus brings regularity of employment even though production requirements vary.

C. *Personnel Policies That Promote Steady Work.* 1. *Planning Personnel Requirements.* The conditions of industry are such that developed technique is needed to avoid unnecessary disturbances in employment. Changes in the number of persons required on various operations may occur as the result of numerous conditions, some customary or expected, and others sudden and unexpected, arising from variations in production from day to day.

As in the distribution and production aspects of business, the first emphasis must be on intelligent foresight and planning. Where a change in personnel requirements is in response to customary seasonal changes in the volume of work or to other conditions which may be foreseen, that should be provided against in advance.

Firms will therefore do well to seek out possibilities of making almost automatic interchanges between certain types of work. There may be some activity or department in a plant which is always slack at a certain time, while another activity or department may always be busy at that time. The warehouses and packing and shipping rooms of many firms allow for such automatic transfers, because when the work of manufacturing is complete or production has begun to slacken, workers are usually needed in the packing room, or the shipping room requires extra labor.

Obviously, a central agency must be available for clearances in labor requirements, with a knowledge of the present requirements of each department and of probable future needs. It must control the hiring of new employees and

the discharge of present ones. Progress cannot be made in balancing a firm's labor force in a plant where foremen hire and fire as they please.

2. *Training for Transfer.* The problem of training is intimately related to the possibilities of transfer. The impression is prevalent that without some expensive and formal system of instruction little interchange of work can be made. The best results will be obtained, of course, where training of workers has its honored place. But there is an opportunity, also, to balance work through less formal instruction.

In a number of factories where there is no training system as such, when a vacancy develops in one section while there is an overcrowding in another the workers are transferred even though they have not been previously trained. They may receive their instruction for the first time by working on the new process. The next time that kind of transfer is made each worker becomes more proficient in it and eventually is able readily to perform standard production on two jobs.

A Rounded-out Program Essential. In conclusion, the stabilizing of sales, the steadying of production, the regularization of employment, all are parts of the same problem. There is rarely any one policy or trick which will achieve the complete result. In most instances success depends on a rounded-out program in which every factor causing irregularity of operation is given its proper attention.

Concerns today which are not attempting to stabilize their business and are not planning ahead for steadiness of production and employment are, from the competitive standpoint, at a disadvantage. Any employer who has analyzed the cost of idle plant and equipment and the expense of hiring, training and developing workers who have to be laid off, or who has reflected about the intangible effects of insecurity upon the executives and the working force, is certain to be keenly interested in reducing, and if possible eliminating, these evils.

ESSENTIALS IN BUDGETING

BY FRANK L. SWEETSER, *Partner, Stevenson, Jordan & Harrison*

What Is a Budget? It is not what most people conceive it to be. It is not figures about sums of money to be set aside for definite expenditures, nor is it a series of graphic charts, nor multitudes of sheets indicating limits not to be exceeded. It is a psychological device. Its primary object is to make people think, to make everybody in the entire organization think. It is hard work to think. We all need something to help make us think.

Why Have a Budget? Every business needs a carefully planned, complete budget of all of its operations, because without it we guess, we jump at conclusions and find out too late that we were wrong. Knowledge is power; therefore, we get the facts.

We need budgets to serve as a basis for comparisons that are better than those in common use. It is unfortunately true that accountants for the most part always have insisted and still persist in making our statistical comparisons with past history, such as last month, the same month last year, or the

same period last year. By the use of a budget we secure a new point of view; instead of looking backward we propose to look forward. It is necessary, of course, to use the past and all the historical facts available, but these alone are not enough. We must add the best knowledge which the best brains in the organization can furnish to project into our budget standards of performance which will serve as a basis for comparison with current events in the coming months.

When properly prepared and used, the budget becomes the best kind of executive tool. It eliminates guessing. It makes accounting effective. It points the way to action. It enables the key men of the organization to reduce costs by the elimination of unnecessary waste and gives that assurance which is possible only through mastery of any situation.

PRODUCTION (Operating)			
No.	Dept.	No.	Dept.
.11	Cutting	.41	Sewing, 8th floor
.21	Dividing	.51	Sewing, 7th floor
.31	Binding	.61	Pressing
CONTRIBUTORY			
Control		Marketing	
No.	Dept.	No.	Dept.
.960	General Office	.91	Distribution Exp. %
.964	Tabulating	.911	Salesmen's Samples
.965	Stenographic	.92	Distribution Exp. Units
.966	Calculating	.922	Stock and Shipping
.968	Accounting	.925	N. Y. Selling Office
.969	Credits and Collection	.93	Design
Personnel		.94	Publicity
No.	Dept.	.95	Order Handling
.983	Employment	.97	Buying
.984	Health and Safety	Production	
.985	Cafeteria	No.	Dept.
.987	Training	.90	General Burden
		.901	Plan-Study-Schedule
		.902	Maintenance

FIG. 1.—Departments; indicating responsibilities and authorities in the organization.

Preparation. The first step in preparing the way is the *organization of the personnel*. Thus human relations come first. The entire business should be departmentized (Fig. 1) in such a manner that the responsibilities and authorities of the organization layout are recognized. It is usually desirable to prepare an organization chart (Fig. 2). In a manufacturing business there would be two classes of departments (1) operating departments or those

which produce the product and (2) the contributory departments which are those rendering service, although not actually engaged in the process of manufacture. Each of these departments must be headed up by an individual whose responsibilities are clearly defined and who accepts the authority for the proper conduct and cost of operation of the activities of his department.

It is essential to departmentize activities, using the most natural arrangement, either by locations, functions, or authorities. Always a department must be composed, not alone of groups of equipment or space, but also of persons, in charge of a definite, responsible head.

An example is given on page 1537.

The selecting and training of executives is of tremendous importance, although commonly done without thought about the future needs of the business. We have all noticed that when we get the right man or woman on a

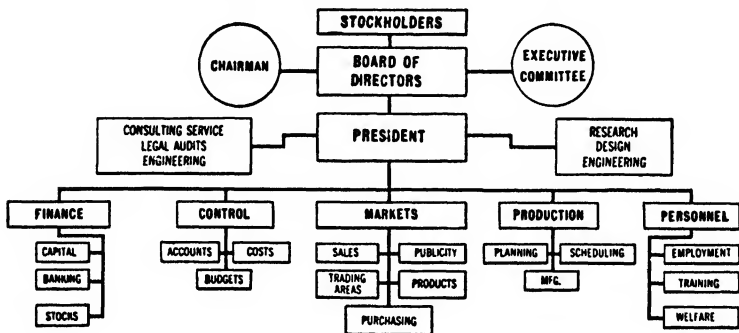


Fig. 2.—Chart of Executive Organization and Functions.

particular job our difficulties cease, but when the wrong person is in charge trouble is ever present. If our budget is to perform its purpose, we must have the right leadership and personnel, both for its origination and its execution.

It is essential that each key man shall provide himself with an understudy for his own job. This feature is so important that it should never be overlooked. One of the interesting tests which can be applied to any executive in the organization is this: if the key man is a good leader and a good teacher and passes over to an understudy all he knows, he is good and ready for promotion. If he keeps his knowledge to himself and does not train an understudy, watch him; he will not grow.

Budget Committee. A budget committee has definite responsibility for coordination of all budgets and is responsible to the president or executive officer. If possible, the chairman of this committee should be a comptroller of the company or the officer who has three functions in hand. This committee should be composed of three members, one each from the production and distribution activities, in addition to the chairman.

Conference Groups. Without doubt the most effective method of preparing the personnel of the organization as well as the mechanism by use of which the benefits of budgetary control are to be secured is to organize various conference groups. *There are to be no secrets.* It is not only undesirable as well as futile, but really impossible, to manage a modern business set-up on a budget plan, using standards and incentive compensation methods, and at the same time stick to the obsolete idea of expecting department heads, key men or subordinate officers to be intelligent in their conduct of business without having the facts.

Moreover, progress in life, both social and industrial, is largely a matter of education. The wrong way to proceed is for the president, comptroller or some other officer to work up a budget, then impose it on the organization. The correct procedure is for the committee to organize groups. One such group would be charged with the preparation of the financial budget, handling the cash forecast, embracing current receipts and expenditures as well as projected capital requirements. Another would be responsible for the production budget, covering materials and supplies, direct labor, and manufacturing burden. The distribution budget conference group would develop market analysis, sales quotas for trading areas, product analysis, direct selling expenses, and selling administration expenses.

The budget committee of three handles the master budget and acts as a coordinating, guiding, and stimulating overriding agent responsible to the executive officer of the company. These various groups, therefore, eventually not only prepare the budgets with intelligence, but they also sell the plan to all others.

No successful budget installation has been accomplished without the full enthusiastic support of the management. Those which have been outstanding in their results have been guided by chief executives whose vision, open-mindedness, and ability to overcome obstacles have been outstanding.

Setting Standards. Perhaps the greatest change in accounting practice during recent years in industry has been the rapid growth and acceptance of the idea of standard costs. Formerly manufacturing enterprises were operated largely as one man concerns. This man through sheer ability was able to make shrewd guesses, which guided the organization during the fiscal year at the end of which, by means of a physical inventory and complete check-up, determined upon the progress and standing of his business. About forty years ago the idea of some kind of costs began to percolate through the minds of business men. Then followed for the next quarter of a century a gradual acceptance of cost accounting, based upon job costs. Under this method costs presumed to be actual were gathered covering all items of manufacturing. Some attention was paid to selling and administration costs, but as a rule these were rather sketchy.

Latterly, largely through the activities of such agencies as national associations, professional accountants and engineers, together with the cooperation of far-seeing executives, it has become the practice to adopt standards for various purposes. Out of this idea has come the acceptance of the principle of standard costs. Budgets and standards are not identical, but they are closely related. Since this discussion is concerned with budgets, it will

be sufficient to mention that standards for costs and for all activities are one of the essential foundation stones upon which the budget structure must be erected.

One of the most interesting and helpful contributions of standard cost accounting to budgeting is the development of the idea of idle capacity, by means of which only those costs are charged to the products which represent normal maximum operation while the extra costs of overexpansion and overextension are charged to management, as they should be.

Planning the Records. Organization, personnel, committees, and standards are not enough. Planned records for the administration of the budget must be prepared. These records as well as those of the accounting and cost departments must be definitely arranged to fit into the responsibilities and authorities. The record-keeping plan should always follow and coordinate with the organization chart. Simplicity is always better. There are many records too complicated. The first question to ask about any record is, can it be eliminated entirely?

It is usually possible, as well as economical, to have the records so planned that most of them can be used with equal facility by the departments of costs, accounting, budgets, and incentives, thus avoiding the building up of a record-keeping structure unnecessarily expensive in its operation. Nevertheless it must be possible to secure from the records those figures which are necessary to establish the budget requirements, the adjustments to meet conditions or to correct errors, and to indicate the performance. When finally and completely prepared, the budgets must cover all of the requirements of the various departments.

An example of a chart of accounts with voucher distribution and expense analysis is submitted in Fig. 3. The decimal classification ties in with the cost accounting, departmentalization, and general ledger control.

Forms. The forms to be used for the records are relatively unimportant. There is no standard type, size, or arrangement that can be announced as most satisfactory. This is for the reason that each individual concern has its own ideas and its own established procedures, all of which should be considered and molded into the picture. Some executives prefer one thing, while others are quite differently minded. It may be said in general that usually existing forms and records form a large percentage of what is required.

It is important, however, that the interpretation and presentation be such that the facts will be quickly observed. To accomplish this it is necessary to study the natural desires of those who are to use the information. Sometimes it is better to employ the narrative form precisely as if you were writing a letter. For those who like figures the amounts in dollars and cents or units of quantities or both will be most acceptable. Others will prefer ratios and index numbers, but for those who understand them graphic charts are undoubtedly most expressive. Everything in the world is relative; and whatever form of record or presentation is employed, it should be remembered that the purpose of the budget is to make people think. This thinking is to be about the coming period, and the relations are to be shown by comparisons with what ought to be and not with what has been.

CHART OF ACCOUNTS
(Decimal Classifications)

The function of the general ledger is control, while that of the voucher distribution is complete analysis. The arrangement shown with the use of decimal classification greatly simplifies the whole accounting and budget procedure.

Classification numbers are coded on all vouchers with vouchers covering all possible transactions in line with the following outline.

The first and second digits to left of all numbers govern general ledger accounts exclusively; following to the right digits three, four, and five represent further classes; then comes a decimal point indicating that the department number follows after the point, thus: 9311.93—93 to the left indicates general ledger account Expense No. 93, 11 indicates Executive Salaries, and .93 Design Department, covering (A) General Ledger Control, (B) Complete Analysis of Voucher Distribution, and (C) Departmental Expense Control.

GENERAL LEDGER ACCOUNTS

1 <i>Cash and Book Assets</i>	6 <i>Current Debts</i>
11 Cash in bank	61 Notes Payable
12 Petty Cash	62 Accounts Payable
14 Accounts Receivable	63 Salesmen's Compensation Ac- crued
15 Reserve for Deductions	64 Bonuses Accrued
16 Personal Accounts	65 Dividends Declared Unpaid
18 Notes Receivable	66 Pay Roll Accrued
2 <i>Inventories</i>	67 Local Taxes Accrued
20 Inventories, Stores Process, and Finished	68 Federal Income Taxes
3 <i>Investments</i>	7 <i>Reserves</i>
31 Marketable Securities	71 Reserve for Current Federal Tax
32 Call Loans	72 Reserve for Inventory Losses
34 Subsidiaries	
4 <i>Plant and Property</i>	8 <i>Capital</i>
41 Land	81 Capital Stock Preferred
42 Buildings	82 Capital Stock Common
43 Equipment	83 Surplus
48 Reserve for Depreciation, Etc., Buildings	
49 Reserve for Depreciation, Etc., Equipment	
5 <i>Deferred Charges</i>	9 <i>Operating</i>
51 Insurance Unexpired	91 Profit and Loss
52 Prepaid Interest	92 Interest on Investment
53 Drawings for Advances	93 Expense
	97 Sales

FIG. 3.—Chart of accounts with voucher distribution and expense analysis

VOUCHER DISTRIBUTION

Any of the foregoing control accounts may be further arranged in detail
Examples are given for Inventories No. 20 and Expense No. 93.

20 INVENTORIES

211	Skeined Yarn	26	Indirect Supplies
212	Coned Yarn	261	Stationery
222	Out production knit	262	Oil, etc.
223	Woven Goods	263	Dyes & Chemicals
240	Findings	264	Coal
241	Thread	265	Shipping Supplies
242	Elastic	271	In Process
25	Transit Goods	281	Finished Goods

93 EXPENSE

930	MISCELLANEOUS	934	FIXED CHARGES
9300	Sundry Items	9341	Depreciation
9301	Advertising	9342	Taxes Local
9302	Office Expense	93431	Rent (Space)
93031	Repairs to Product	93432	Rent Equipment
93032	Repairs to Equipment	9344	Insurance
9304	Loss on Rejected Product	9345	Protection
9305	Loss on Samples	9346	Interest on Investment
9306	Entertaining		
		935	PUBLIC SERVICE
931	WAGES AND SALARIES	9351	Insurance
9311	Executive	9352	Tel. & Tel.
93120	Indirect Labor Misc.	9353	Legal & Professional
93121	Factory Supervision	9354	Water
93132	Factory Watchman, Porters	9355	Light & Power
93133	Factory Technical		
93135	Salesmen	936	DELIVERY
		9361	Freight
9326	SUPPLIES	9362	Express
93260	Miscellaneous	9363	Cartage
93261	Stationery	93641	Parcel Post
93262	Machine Parts	93642	Parcel Post Billed
93263	Dyes & Chemicals	9365	Trucking
93264	Coal	9366	Transportation of Returns
93265	Shipping Supplies		
		937	DEDUCTIONS
933	TRAVELING	9371	Discount Allowed
9331	Executive	9372	Credit & Collection
9332	Buying	9373	Bad Debts
9333	Selling	9374	Exchange
	938	SUNDRY GAINS (or Expense)	
	9381	Waste sold	
	9382	Gain on Materials Sold	
	9383	Labor	

FIG. 3.—Chart of accounts with voucher distribution and expense analy.

Standard Practice Instructions. An excellent by-product of the conference group method, not alone in budgeting, but in all other activities, is the development of detailed instructions. There is no better tool for the prevention of buck passing, alibis, or fall-downs than to have written instructions issued for all procedures. Such a basis of operation should not be entered into lightly. It is no sinecure to prepare standard practice instructions. Those who have attempted it will understand.

Incentives. A natural development arising from budgetary practice and standards is the use of incentives as a basis of compensation. Incentive compensation may be grouped under three classes:

1. Profit sharing for higher executives exclusively, usually the officers of the company.
2. Saving sharings for key men, such as department managers, foremen, etc.
3. Workers' bonuses based on intimate intensive time studies of the elements of the particular operation concerned.

Indirect workers of all kinds are tied into either the key men or the workers groups, so that every employee from the highest to the lowest feels the urge of extra compensation paid for extra effort.

Installation. No attempt should be made to install a budget procedure until the entire organization has been fired with enthusiasm for the idea through participating in its preparation by means of contacts with the conference groups and committees. It is useless to expect performance or cooperation until everyone understands. Operating heads as well as field men must be brought into the picture and made thoroughly conversant with the plan, in other words, sold on it before starting.

Year Basis. It is customary to use the operations of a fiscal year as the primary base with a breakdown corresponding to the character of the business by seasons, quarters, months or accounting periods. Seasonal trends should be recognized by a study of previous records so that the budget for January, for example, may be based on the probable proportion of that month to the year's business, and for the other months in the same manner. A product breakdown is desirable, especially in considering sales quotas and manufacturing capacities.

Adjustments. Bearing in mind that the standards and budgets are no part of the regular accounting but are merely measuring sticks, it should be realized that frequent adjustments, based on facts disclosed by operations or further study, are desirable. Changes in capacity, schedule, conditions, or whatever may be the basis of adjustment should be met when it becomes evident that such a change would be beneficial. In this connection emphasis should be placed upon the purpose already delineated. It is not expected that figures of budget and actual figures will precisely coincide. Indeed, such a coincidence might be the basis of the suspicion that all was not well. Budgets in industry are not appropriations of money to be kept until expended for definite objects, although this is true in municipal and governmental affairs.

It is expected, however, that the individual at the head of any department or activity will assist in originating the budget allowances, will agree to the

final budget as set up, will endeavor to carry out its provisions, and will not only be able but willing to explain the reasons why the budget did not balance insofar as his control is concerned, so that he may grow in ability to make adjustment to the present budget and to prepare more intelligently those for further periods.

Summary. Reviewing, in brief then, the most important considerations are the human relations. The greatest benefits of budgeting are its by-products. It is a definite urge on the executive officer and provides him and his associates with the knowledge required to permit him to focus his own super-power on those activities which most need it. Budgetary control makes people think and causes them to look forward instead of backward.

Unorganized guessing is eliminated. Opportunity for the selection and advancement of individuals is provided. Activities are coordinated. Departmental fences are broken down by the interchange of ideas and thoughts in organized conferences. Standards which are essential for modern cost accounting and for the measurement of performance find their natural outlet with greatest use.

Planned records, simplification of procedures, definite instructions, and incentive compensations increase profits and reduce costs.

Many say: "It can't be done." But it has been done. It is continually being done. It will continue to be done. Only those who have vision, energy, and stamina can do it. Anyone of that class, will have no difficulty. How can the top executive, who after all is only human, be expected to guide the ship unless he has the cooperation of his organization in such matters, and who is better fitted to forecast the future possibilities than those who daily observe the facts, figures, and events going on under their authority?

The results which may be expected are: comparisons based on the budget instead of history, better knowledge of what happened and why it happened, guidance for the stabilization and increase of future profits, and that training of the organization which inspires confidence while creating enthusiasm and initiative.

THE BUSINESS SURVEY

BY HAROLD VINTON COES, *Manager Industrial Department, Ford, Bacon & Davis, Inc.*

Definition. A business survey or report is a comprehensive examination of a business as a whole with reference to its capital structure, management policies and practices, organization, personnel, administration, markets, competition, merchandising, transportation, products, inventories, processes, production costs, and working capital, to determine the present position of the business, and to make a comparison of the results of operation with known standards; to reveal existing defects and trends towards unsound practices; the means for their correction and the coordination of functions and activities. These surveys, sometimes called *industrial audits*, when they are periodically made, permit a reasonably correct picture of the business, as a going concern, to be drawn.

The business survey should not be confused with audits or valuations. An audit is an arithmetical presentation of past transactions or facts interpreted by figures.

A valuation or appraisal is an engineering cost determination of the fixed assets as of some predetermined date for some predetermined purpose.

Business Phenomena. The following phenomena in business are familiar:

Certain industrial units grow and expand; others drift or decline; whole industries and businesses pass from the control of one set of owners to another; certain parts of the country enjoy good business with development and expansion; other sections are at a stand still; others experience recession; supposedly financially sound and apparently healthy businesses, many whose names are a household word, which have been synonymous with power and prestige suddenly, and without warning to the public, are in trouble and before one is aware that a change is or has been taking place, their position in the industry has been supplanted by others who had scarcely been considered as even encroaching on the business of the former.

It is the province of the business survey to ascertain the underlying reasons for these every day occurrences.

Success Factors in Industry. The success and prosperity of any industry generally depends upon the following factors:

1. The economic need for the article or articles.
2. The organization, personnel and management policies.
3. The type, character, condition, relationship, and arrangement of the production facilities.
4. The departmental layouts and condition of the fixed plant and its service facilities.
5. The plant or business location and the balance of its economic factors.
6. The adequacy and effectiveness of the research, merchandising and distribution organization.
7. The financial structure and the policy pursued.

Unfortunately, the ordinary financial statement generally presented does not and cannot go far enough behind the scenes to give a correct picture. The statement usually tells what has taken place; what one really needs to know is what is likely to or about to take place; two totally different and distinct things. The financial statements will not give any information, as a rule, regarding the seven points previously mentioned, except possibly the last—the financial policy pursued—and probably it will not reveal all the important and underlying facts on that.

We might go a step further and say that the success of a business today rests upon a knowledge of the political, sociological, psychological, economic and technical laws pervading most businesses. A business survey made by those properly qualified by training and experience can supplement the statements in such a way that the two will give a reasonably correct picture of intricate situations and it can be made to indicate the favorable and unfavorable trends.

Classification of Business Ailments. The survey should disclose the principal reasons why a company is not making adequate returns on its invested capital. Poor or inadequate earning power is usually traceable to

the violation of known economic laws and fundamental business principles. In general, the major difficulties will usually be found under one or more of the following classifications:

1. Incompetence in general management.
2. Inadequate working capital (or frozen working capital).
3. Manufacturing cost of goods sold too close to the prevailing selling prices.
4. Expensive, inadequate and obsolete manufacturing methods.
5. Expensive, inadequate and obsolete selling and distribution methods.
6. Poor and expensive financial structure and involved corporate structure.
7. Poor organization set-up and organization policies.
8. Obsolete plant equipment.
9. Uneconomic plant location.
10. Bad purchasing and purchasing policies.
11. Unsound labor conditions and policies.
12. Lack of adequate coordinated means for control of all phases of the business.

The survey should disclose not only the general nature of the ailments and defects in the business, but it should serve as a basis for determining what remedial measures should be applied and where.

The more thorough and accurate the survey the more reliable the conclusions and recommendations and the more readily the installation of the remedial measures can be made.

Probably the most valuable feature of a business survey is its impartial exposure of the principal factors affecting the profit and loss statement. Frequently the real significance and importance of these factors is not realized, the operating records and statements do not reveal them in sharp enough contrast for the management to perceive their real importance or their trends. Often it attributes the difficulties to factors or conditions that are primarily not responsible, or if responsible not to the degree imposed. The business survey on the other hand places before the management the significant facts, their correct relationship and import in such a manner that it is possible to isolate the problems and set about their solution in accordance with their relative importance in producing profits or reducing losses.

Such a survey places the management in a position to be able to present to the board of directors the real facts of the situation as contrasted with opinions that members of the board may hold by reason of their long association with the business, but necessarily superficial knowledge of its significant details. It is frequently difficult for a management to overcome these opinions and to modify existing policies and methods that it is believed are adversely affecting the business without a survey presenting the real facts of the situation.

A typical survey of production and sales would deal with the following subjects:

Production:

1. Analysis of production methods.
2. Design of product for economical manufacture.
3. Standardization.

4. Planning.
5. Preparation.
6. Scheduling.
7. Dispatching.
8. Raw and processed inventory control.
9. Labor control.
10. Equipment control.
11. Adequacy of equipment and processes.
12. Material handling.
13. Plant and departmental layouts.
14. Sequence of operations.
15. Organization.
16. Effectiveness of means for planning and control of production.
17. Manufacturing expense per unit of product.
18. Relationship of manufacturing costs to selling prices.

Distribution and Sales:

1. Analysis of markets.
2. Sales planning.
3. Sales execution.
4. Means, methods and machinery of distribution.
5. Sales personnel and organization policies.
6. Methods and procedure, results analysis.
7. Pricing policy, advertising, and publicity.
8. Sales forecasts.
9. Coordination of sales and production.
10. Selling expense per unit of sale.
11. Relationship between cost of sales and selling price to consumer, discounts, etc.
12. Derivation of gross and net profits, by lines, by territories, by salesmen.

Typical Studies. Typical studies that may be made for a business are:

Plant Layout. Studies to determine present and future requirements, location and arrangement of departments, equipment, service facilities, proper flow of work, sequence of operations, and economic utilization of space.

Plant Location. Investigation and studies of focus of economic forces determining the adequacy of the present location or the proper one for a given industry.

Rehabilitation of Existing Plants. Studies to determine plan for physical reorganization and rehabilitation, modernization and improvement of existing plant, providing the location is economically sound.

Power and Service Facilities. Analysis of power generation and transmission costs; air, gas, water, and electrical energy, material handling, yard and internal transportation.

Cost and Costing Procedure:

1. Direct and indirect costs.
2. Cost of raw materials.
3. Labor.
4. Manufacturing overhead.
5. Distribution overhead.
6. Administration and non-departmental expenses.
7. Methods employed and results obtained.

8. Uses made of figures and statements.
9. How do they facilitate control.
10. Means for comparison, control, and reduction of costs and expenses, tie-in with the general books.
11. Reflection in balance sheet and profit and loss statement.

Budgetary Control. Mobilization of past experience, statistical data, present factors and policies, and future condition for the establishment of budgetary control, coordination of sales and production, establishment of sales and production quotas, comparison and control of all detail budgets by a master budget. Reports and the means to provide executives with necessary classified and coordinated information to permit intelligent operation and regulation.

Office Methods and Accounting. Analysis of operating systems and procedure with a view of simplification, elimination of waste, reduction in time, introduction of mechanical devices, standardization and improved operating, accounting, and cost control.

Office Layout and Equipment. Survey of office space and planning to meet present and future requirements of the work with layout so that the flow of work will be expedited and the space utilized to the best advantage.

Executive Compensation. Method of compensation of executives, length of service pensions, retirements, character of the systems and the results obtained.

Personnel. Consideration of sound policies and practices in the selection, training, promotion, welfare and remuneration of employees, including the incentives, records, rating, and training courses, etc. used.

The Comprehensive Survey. A comprehensive business survey, depending in its detail upon the type of business, would ordinarily secure essential data somewhat along the following lines:

I. Plant and equipment.

A. Buildings.

1. General description, history and location.
2. Type, condition and adequacy.
3. Accrued depreciation, maintenance and obsolescence.
4. Fire protection.
5. Value of (optional).
 - a. Present day.
 - b. Insurable.
 - c. Going concern.
 - d. Liquidated and salvage.
6. Physical, geographical, economic and legal limitations.
7. General arrangements, departmentalization.

B. Equipment.

1. Type, condition, and adequacy.
2. Accrued depreciation, deferred maintenance and obsolescence.
3. Value of (optional).
 - a. Present day.
 - b. Insurable.
 - c. Going concern.
 - d. Liquidated and salvage.
4. Present utility.
5. Efficiency.
6. Capacities.

- 7. Machine balance.
- 8. Bottlenecks.
- C. Transportation facilities.
- II. Raw materials.
 - A. Where and how furnished and accessibility to
 - 1. Finished goods.
 - 2. Semifinished goods.
 - B. Cost of.
 - C. Cost of handling and transportation.
 - D. Methods of receiving, checking and distributing.
 - E. Condition of and methods of storing.
 - F. Quantities normally carried.
 - G. Method of pricing.
 - H. Purchasing methods, policy, contracts, scheduling.
- III. Labor.
 - A. Class, type, number and sex of employes and labor policies.
 - B. Turnover and reasons.
 - C. Employment methods.
 - D. Wage payment methods.
 - 1. Bonus.
 - 2. Premium.
 - 3. Stock sharing.
 - 4. Profit sharing.
 - 5. Other methods.
 - E. Welfare work, plant community policies, facilities, educational policies and work.
 - F. Industrial relations.
 - 1. Safety committees.
 - 2. Shop committees.
 - 3. Shop representation.
 - 4. Industrial councils.
 - 5. Other methods.
 - G. Federal, state, municipal and union regulations.
- IV. Departments.
 - A. Layout.
 - B. Relationship to each other.
 - C. Sequence of operations.
 - D. Methods of handling work in process.
 - E. System of administration.
- V. Products.
 - A. Types of, units manufactured, range of lines.
 - B. Demand for, suitability as to public demands.
 - C. Competitive.
 - D. Seasonal demand for.
 - E. Specifications.
 - F. By-products, disposition of.
 - G. Patents, trademarks, etc.
 - H. Design, weaknesses, economy, etc.
 - I. Relative profitableness of various units or lines.
 - J. Standardization.
- VI. Handling materials.
 - A. Railroad and water transportation facilities.
 - B. Interurban and truck transportation facilities.
 - C. Yard, department and interdepartmental methods and facilities.

D. Routing and dispatching.

E. Coordination.

VII. Production.

A. Type of manufacture.

1. Continuous.

2. Intermittent.

3. Mixed.

4. Mass production.

5. Specialty production.

6. Jobbing methods of manufacture.

B. Costs.

1. Labor, direct.

2. Material, direct.

3. Indirect charges and shop overhead.

4. Cost per lot or per unit.

5. Comparative costs.

C. Factors limiting production.

D. Production economics.

1. Productive capacity of plants.

a. By departments in units and dollars; maximum, normal and average.

b. Plant operation on date of examination in terms of maximum productive capacity.

c. Excess capacity.

d. At what per cent of normal operating capacity can the plant break even? For each 5 per cent increase or decrease what is the corresponding gain or loss?

2. Operating ratio.

3. Ratio of indirect to direct labor.

4. Output.

a. Per employee in dollars and in units of product per year.

b. Per dollar of production pay roll.

c. Per employee (productive).

d. Per dollar of invested capital.

e. Per dollar of equipment.

5. Factory burden.

a. Methods of application.

b. Amount and distribution.

c. Methods of control.

E. Tools, jigs, fixtures, patterns, auxiliary equipment.

1. Adequacy, character, condition, degree of obsolescence.

VIII. Power.

A. Generated, purchased or both.

B. Methods of generation, distribution and use.

C. Cost per unit.

D. Shutdowns, maintenance, interruptions, continuity of service.

E. Power per unit of product.

F. Comparison of power plant economics with normal attainable.

G. Central station facilities and service.

IX. Cost control, collection and distribution systems.

A. Methods in force.

B. Accuracy.

C. Reflection of the facts.

D. To whom the reports go.

- E.* Are they made in sufficient detail, so presented and compared, and received at such a time as to permit intelligent and prompt action?
- F.* Do the cost figures tie in with the general books?
- G.* Are the books independently audited, how often and by whom, and when are the books closed?
- H.* Analysis of probable expense items.
- I.* Budgeting plan and procedure.
- X. Plant balance.
 - A.* As to departments.
 - B.* As to equipment.
 - C.* As to inventories.
 - D.* As to labor.
 - E.* As to orders and sales.
 - F.* As to invested capital, borrowed capital, and working capital
- XI. Merchandising.
 - A.* Distribution.
 - 1. Markets.
 - a.* Domestic, volume of.
 - b.* Foreign, volume of.
 - c.* What market surveys have been made?
 - 2. Methods of distribution.
 - 3. Price determinations.
 - 4. Terms of sale.
 - 5. Selling policies, territory restrictions.
 - 6. Advertising methods and policies.
 - 7. Competition, probable competitors.
 - 8. Permanence of market, actual, potential.
 - 9. Principal customers.
 - 10. Engineering analysis of sales.
 - a.* By territory.
 - b.* By classes of product.
 - c.* By cost per product.
 - d.* By classes of customers.
 - e.* Standardization.
 - 11. Policy with regard to
 - a.* New models, styles, changes in design, color, variety, etc.
 - b.* Replacements, repair parts.
 - c.* Complaints.
 - 12. Seasonal and territorial demands.
 - 13. Experimental and development policy.
 - 14. Research.
 - 15. Deliveries and shipping.
- B.* Economics.
 - 1. Ratio of total raw inventories to gross sales.
 - 2. Ratio of finished goods inventories to gross sales.
 - 3. Ratio of total inventory to gross sales.
 - 4. Ratio of plant investment per dollar of gross sales.
 - 5. Ratio of cost of sales to selling price.
 - 6. Ratio of selling and advertising expense to gross sales.
 - 7. Ratio of general administrative expenses to gross sales.
 - 8. Ratio of working capital to gross sales.
 - 9. Ratio of experimental and developmental expense to gross sales.

10. Ratio of annual gross sales to average current assets.
11. Ratio of net profits to net sales.
12. Ratio of net profits to invested capital.

XII. Organization.

A. Type of organization, chart of

1. Military.
2. Functional.
3. System of management in force.
4. Committee management.
5. Other forms.
6. Functions of personnel.
7. Duplication.
8. Overlapping authority.
9. Personnel, characteristics of, suitability.
10. Handling of routine.

B. Personnel.

1. Executives, assistants and foremen.
 - a. Type.
 - b. Duties.
 - c. Previous experience.
 - d. Ability.
 - e. Judgment.
 - f. General fitness.
2. Expert assistance.
 - a. Legal.
 - b. Accounting.
 - c. Merchandising and advertising.
 - d. Production.
 - e. Engineering.

XIII. Financial.

A. Banking.

1. Financial policy.
2. Bank lines.
3. Commercial paper.
4. Notes payable.
5. Notes receivable.
6. Contingent liabilities.
7. Credit experience.

B. Statements.

1. Balance sheets and operating statements.
 - a. Comparative.
 - b. Arrangement.
 - c. Comprehensive.
 - d. Adequate.
 - e. Audited.
2. Ratio of current assets to current liabilities.
3. Ratio of current liabilities to total liabilities.
4. Inventories, amount and how priced, reserves.
5. Receivables, condition, age, value, reserves, etc.

C. Securities.

1. Bonds outstanding, type, class, interest, etc.
2. Preferred stock outstanding, type, class, interest, etc.
3. Common stock outstanding, type, class, interest, etc.
4. Other forms.

5. Ratio of bond interest to net earnings.
6. Ratio of preferred stock dividends to net earnings.
7. Ratio of common stock dividends to net earnings.
8. Ratio of bonded indebtedness to plant investment.
9. Net worth.

D. Earnings.

1. Earnings statement, comparative.
2. Profit and loss statement, comparative.
3. Fixed charges, ratio to earnings.
4. Deferred charges.
5. Reserves.
 - a. Sinking funds.
 - b. Depreciation and replacement.
 - c. Bad debts.
 - d. Development and changes in the art to keep company abreast of the times.
 - e. Patents, etc.
 - f. Taxes.
 - g. Others.
6. Surplus.
 - a. Reconciliation of surplus account.

E. Working capital.

1. Ratio of working capital to total capital, and comparison with customary amount in industry.
2. Ratio of cash to gross sales.
3. Ratio of cash and cash resources to current liabilities.
4. Ratio of working capital to gross sales.
5. Ratio of current liabilities to gross sales.
6. Purchasing, methods, scheduling, turnover, terms of sale, diversion of earnings to fixed assets, etc., as affecting working capital.
7. Proportion of working capital frozen.

F. Budgets.

1. How prepared.
2. Set-up for comparison.
3. Arrangements for control.
4. Accuracy.

G. Methods of control.

1. Operations.
2. Scheduling.
3. Planning.
4. Material.
5. Labor.
6. Overhead.
7. Cost.
8. Reports.
 - a. Operating conditions.
 - b. Status of production.
 - c. Production costs.
 - d. Periods covered by reports.
 - e. Whom are they rendered to.

XIV. Purchasing.

A. Methods.

B. Source of supply.

- C. Purchasing statistics.
- D. System of follow-up.
- F. Control.
- XV. Engineering.
 - A. Force, type, etc.
 - B. Quality.
 - C. Efficiency.
 - D. Methods.
 - 1. Symbolization.
 - 2. Bills of material.
 - 3. Issuance and recall of drawings.
 - 4. Changes.
 - 5. Specifications.
 - E. Economical design.
 - F. Rejections.
 - G. Customers complaints.

It must be borne in mind that the survey must be so organized and so conducted as to cut clear across all the divisions of a business *without undue emphasis on the activities of one division* as compared with another unless in the course of the survey certain well defined weaknesses in a given division are revealed. Sound technique insures a correct perspective and this is the most important attribute of the business survey, since incorrect perspective due to prejudice or preconceived ideas will produce a picture inaccurate as to form concealing the more subtle dangerous underlying trends.

CHAPTER IV

USE OF RESEARCH AND SPECIALISTS

BUSINESS RESEARCH

By C. W. WILSON, *Manager, Research Department, Pittsburgh Railways Company*

Scientific Method of Dealing with Problems Available to All. Scientists and technical engineers long ago accepted the fact that they could not deal with problems in their entirety, but that they must work with isolated elements. Management is now rapidly becoming conscious that it, too, must follow this practice more extensively. It is frequently a vexing question to determine which elements of accumulated experience will continue to serve as structural material for policies and which must be discarded. The discovery and understanding of elements hitherto unknown, but which undoubtedly influence results, also cause much concern.

It is not only natural but inevitable, that the methods which have been profitably applied in experimental research for many years should be important factors in the application of research principles to management's especial use. The idea that scientific research is an instrument for the use of scientists and technical engineers only, and that highly trained specialists have a monopoly on research methods, has been recognized as the delusion it undoubtedly is. There has been a failure, generally, to distinguish between the accumulated knowledge possessed by those chiefly identified with scientific research, and the orderly method with which they solve their problems. Increasing numbers are also recognizing that there is a sound and relatively simple method or technique of investigation and problem solution; that while the details and the magnitude of problems may vary without limit, the fundamental types of their elements are essentially the same.

A Specialized and Detached Group Should Do the Work. Officials engaged in active management, though keenly alive to the situation, cannot prosecute research studies themselves. It is a physical impossibility. Someone, somewhere, free from the stresses of operating responsibility, must do it for them. Such work should be detached and as coldly scientific and impersonal as possible, though sufficiently close to actualities to prevent oversight of pertinent factors.

Theories Put into Practice. It was such views as the foregoing that led the company wherein the policies and methods herein discussed are in actual practice, to create a research department, Feb. 1, 1924. The company inaugurated its research policy in two ways:

First, by freeing individuals in technical and operating departments from operating pressure and isolating them so that they might pursue research work.

Second, by the creation of a major department, called the "research department," which is free from direct operating responsibility and devotes its research activities to management problems.

The department as now constituted is not the product of any detailed, preconceived ideas either as to organization or the nature and amount of work which should be done, but represents a gradual development in response to actual needs. The beginning was more like the departure of pioneers. The application of the principles of research to the problems of management is still generally in its early stages. The elements involved are intangible, and the spread of a common understanding as to effectiveness and value is necessarily slow. The fact that methods of profitable application cannot be developed at once, but must grow gradually, has retarded its broader use, though its value is generally accepted in principle. Then there is the opposition of those who sincerely misunderstand the scope of its possibilities. There is also the inevitable retarding influence of prejudice, for there are some who still believe in the continuance of practices which require scant application of research principles. The first attempts at anything are usually sprawling and frequently bristle with opportunities for improvement and refinement. The early application of scientific research to the use of management was no exception. In addition, pseudoscientists, who tried to exploit half-baked schemes to their own advantage, left a trail of obstacles which have to be overcome.

There should be an effort toward securing general acceptance that management research work has no mystery attached to it, but is simply an orderly application of sound method to solve every-day problems. The idea of mystery encourages the expectation of miracles, which invariably ends in disappointments.

It became increasingly apparent that if such a department were to develop, it must have a chance. A chance means proper official standing, adequate personnel organized as soundly as possible, and good working conditions. Creating a title and providing inadequate force does not make a research department capable of profitable production in quantity any more than a shop foreman and a helper or two can comprise an efficient machine shop.

The research department is a major department in charge of a research manager, who reports direct to the operating head of the company. The research manager is a member and chairman of a group of officials which functions as an advisory body in support of the operating head in policy matters. The work of the department as it functions at present falls roughly into three divisions, that performed by:

An economist.

An engineering division (which, in addition to a group of engineers, includes one section specializing in statistics, one in development of the property's recurrent work methods, and one in budget preparation and control), in charge of a research engineer.

A general office division (which performs general office service for all operating general officers but which has been made a division of the research department for reasons of economy and effectiveness).

The Problem of Securing Consumption or Full Use of Releases. The effectiveness of and justification for a research department depends upon the profitable consumption of its products. The mere production of studies, excellent though they may be as abstract research efforts, may not assure their profitable use or consumption. During the years of development of the department and its methods, the following elements have assumed outstanding importance:

a. Profitable consumption, or use, of its releases must be the main objective. An understanding of the consumers' needs must shape production effort from the time the project is set up until it is finished.

b. Priority selection is the heart of effective research production. Without adequate priority-selection facilities and the careful use of them, any department is bound to drift from its most profitable course.

c. A project placed in priority should be considered the equivalent of a product to be manufactured and consumed. The research department organization and personnel should be looked upon as the equivalent of tools and equipment needed for manufacture, and methods which produce the equivalent of line production applied to desk work should be used.

d. A careful treatment of presentation requirements is essential. Much otherwise able research work proves valueless to the consumer because the material is prepared from the viewpoint of the producer, and little effort is made to reach the experience and habit of thought of the consumer.

e. Follow-up machinery must be provided so that power is placed in the hands of the research department to see that no effort is wasted because some of its releases fail to receive proper consideration.

f. Before profitable consumption can be hoped for, a research department must demonstrate that it is not in destructive competition for credit with line departments.

Profitable Consumption. A manufacturer may sell his products by means of high-powered salesmanship, but if he fails to satisfy his consumers he cannot prosper for long. Research departments may likewise develop studies without limit, but if they are not put to profitable use the foundation of the department cannot be sound. If profitable consumption does not result, it should be the department's job to find out why. When a job is released, provision should be made for follow-up, and the record should not be closed until a brief, but comprehensive, statement is added to it showing the use made of the release and what it led to. This provides a sort of measure by which the department may check the effectiveness of its work in general and and that of individuals in particular.

Producing for the Consumer. A project placed in priority should be considered to be the equivalent of a product beginning to be manufactured. The objective in this instance is defined as the finished piece or work ready to be released; the purpose is what it is to be used for after it has been released. It is very easy to accept as a fixed handicap the limitations of an inadequate organization, and to assume that the consumer must and will adjust his

needs to the conditions in the department. Here management encounters the problem of expanding or contracting the research working force. Management need have no difficulty in reaching a decision, for the selective list referred to later shows clearly all jobs which have been set up and, consequently, what work is waiting to be done.

Priority. Timeliness is among the most important factors in achieving consumption, and a dependable set-up for sound priority control is essential. The department is visualized as a multiple instrument making a number of contacts, through each of which it bores into one of the group of problems most pressing at the time. The number of contacts is increased or decreased as the pressure for production increases or decreases. This flexibility in the structure of the department enables management to control research expenditure as conditions may warrant.

An unlimited number of jobs should be welcomed and each one should be identified by number, represented by something tangible, and placed in a selective list to await priority. The more jobs there are, the better chance there is that the one selected for production by the process of elimination will represent the most pressing economic need of the company at the moment. Urgency of need, comparative economic importance, and timeliness are the principal factors which control priority. Unless the absolute necessity of a sound priority procedure is generally understood, a research department will be helplessly chasing its tail trying to keep up with the most recent, but not necessarily the most important, requests or other forms of stimuli. Reason must rule if sound production is to be expected, and a reasonable executive will not object to being asked to make an "either-or" decision when the impossibility of doing two things at one time is presented to him in the proper way and he is given an opportunity to deal with something tangible.

Careful selection from a selective list of jobs for the preferred list is looked upon as one of the most important activities of the department. Ample time and discussion are devoted to this selection, for the preferred list is the equivalent of a chart, indicating the general direction in which the department is moving. This general trend of priority is established some time in advance of the actual production effort. There are emergencies, of course, and no plan works perfectly always.

Presentation Requirements. Inadequate presentation has prevented great numbers of excellent researches from achieving their purpose. The perfect presentation is fitted exactly to the needs of those who have to use it. The presenter of any group of facts or discussions, oral or written, assumes the responsibility of reaching the experience of those to whom such presentation is made. The expense of research releases is assumed by a company with the expectation that they will be useful. It is, therefore, the research man's job to develop the facts in an understandable manner.

Follow-up Machinery. If evidence that a research release has received consideration is not forthcoming within two weeks, inquiries are made. As a last resort, an official follow-up letter may go out from the research manager, with copy to the vice president. A release may be returned to the department by the consumer for any reason, provided some support for the reason is given; but the release must not be ignored after receipt. The department

is supported in the position that, as it must buttress its statements and findings by what it conceives to be fact, it cannot have them thrown aside by the mere unsupported opinion of some operating department head. He is expected to differ when he sees fit, but he must have some support for his opinion when he does so.

The Research Department Is Non-competitive. While the research department should strive to have its consumption record tell a constructive story, it cannot afford to forget that, as a department, it is maintained by the management as a tool for the use of all officers and employees. Its principal objective is to enable the personnel of the company individually to do better jobs. Tools that are used willingly and wholeheartedly do not compete with the user. If the department is so unfortunate as to create the impression that it is trying to grab credit at the expense of those whom it is supposed to support, it is creating an insurmountable barrier between itself and its proper goal of collaborative work. That is one of the reasons why the department has not compiled records purporting to show the specific economies and other achievements to which it has contributed. It could not, as a rule, have achieved any important advantage unaided by some operating department. It is believed to be a wiser policy, therefore, to watch carefully the consumption record and so learn the use made of releases. In this way, company officers are kept aware that the department is constantly contributing constructively to the economic welfare of the company, while at the same time they, who alone make the releases profitable by using them, are not antagonized by any boastful emphasis regarding specific achievements. The department must function in spirit and in fact as a service tool for the net good of the company as a whole, not as a department glorified by particular successes which other department heads may feel are achieved at their expense.

Type of Research Projects. Jobs originate literally from everywhere. They are set up in response to requests from executives or employees; or the department, in its work, discovers or identifies projects which require development. In fact, its jobs cover the entire field of management, from minute cost analyses to studies used in determining policies of major importance.

Coordination of Research Department Work with That Done in Other Departments. Specialization without coordination amounts to disorganization. Coordination between engineers and individuals in the department and those outside it is achieved by means of the identified job. Jobs are not assigned to individuals outside of the department, but the process of element identification makes coordination practical and easy. Jobs that require material or information from engineers in other departments are set up in the usual way and assigned to a research department engineer, who defines the request and who cooperates with whatever department is concerned. With a proper understanding that the research department is not competitive, and that it is a tool provided by the management in order that all line men may each profit more on account of better results which they are helped to achieve, the relation between research workers and line workers should be that of cooperators and costimulators.

Cost of Research. The pay-roll cost of the actual research work, as the name is usually defined, which is done by the research department, is approximately 0.16 per cent of the gross revenues of the companies served.

With the exception of a few nominal charges made to affiliated companies which function under separate corporate set-ups, the cost of the department is charged to overhead. The job system that is in use, together with the recurrent work authorities for all recurrent work, make it possible to charge with relative accuracy for each piece of work done, should it be desirable to do so. It is believed, however, that a greater use is made of the department as a tool for the benefit of the entire company if other departments are not discouraged by charges made to their operating accounts for service received. The research department is not, and cannot be, more interested in one operating department than in another. When its cost is considered as an overhead charge, the actual economic needs of the entire company have a better opportunity to influence priority determination. If charges were made to individual departments and had to be approved by them and their accounts had to reflect the cost, it would certainly tend to inhibit the free use of research facilities. This is particularly true if an operating department head is inclined to feel that his results are the best that can be secured, and that expenditures for research in connection therewith are relatively useless.

Should Research Departments Have Opinions? A research department should vigorously attack the practice of depending upon unsupported opinions. Its suggestions and discussions should set forth conclusions, but it should be clear that such conclusions are the result of a careful consideration of facts, which should be enumerated and discussed, if the requirements of clarity make such discussions necessary. Opinions, like definitions, are so apt to remain unchanged long after the structures which originally supported them have changed, that close watch should be kept for the beginning of their obsolescence. It is a common human tendency to feel that an opinion once expressed must be defended ever after, else a loss of prestige will result. It is much safer and wiser for a research department to assume the position that, as it interprets the facts as they are today, certain conclusions appear to be sound, but it is always possible for new conditions and new elements to appear at any moment which may render today's conclusions subject to modification.

Likewise, a research department, when endeavoring to secure consumption of its releases, should not accept a rejection or refusal to consider them based on unsupported opinion. It is obvious that if an operating department head could merely disagree and say that his experience indicates the suggestions made are impractical and that he does not care to take the time seriously to consider the alleged facts presented, a ridiculous situation would result. Often the most hallowed of practices may have served its purpose and should be subjected to a coldly impersonal analysis to determine the wisdom of its continued existence; and just as often the mere suggestion of such a thing is looked upon as little short of sacrilegious. It should be understood by all that the department is just as anxious to support the continuance of a practice, if the analyzed facts indicate it is still sound, as to point out weaknesses and suggest something new. The burden of reaching a common understand-

ing in such matters should rest upon the research department. The department should, however, be supported in a follow-up procedure that actually means something. Department heads should be encouraged to point out what they believe to be errors in statements or conclusions and should be helped to substantiate their disagreement if it is possible to do so. They cannot, however, be permitted to wave aside carefully developed research studies.

Research Personnel. The benefits to be derived from business research would be much more extensive if there were a more general recognition that the orderly effort known as scientific research is not a mysterious something performed by queer people behind closed laboratory doors and involving the use of extremely complicated methods; and further, that some excellent jobs of research are being done by quite ordinary people who do not dream they are doing research.

A keen observer who can recognize a fact, who can make intelligent distinctions between facts, who can be depended upon to draw sound inferences, who is a good judge of evidence when he is checking his inferences, and who has the patience and the concentrative power to keep after a problem until he has whipped it, is potentially a good research man. He, of course, must have the education and preparation that will give him the equipment of necessary knowledge to work in his particular field; but, if the inherent qualifications enumerated are not developed to a reasonably high degree, he will not make a good research man no matter how extensive his educational preparation may have been.

In the development of the research department referred to here, the engineering field has been turned to most frequently when new personnel has been needed. The department has, however, some men who are not engineers by training but who have done some excellent work and are considered valuable. They, however, it is believed, would have made good engineers if they had elected to enter that profession.

The Place of the Specialist in Management Research. It is obviously out of the question for a business research department of moderate equipment to include specialists in all lines in its personnel. It should, however, draw heavily upon the accumulated knowledge in the possession of those especially equipped and should have contacts which enable it to proceed quickly and without confusion in securing the services of men who have qualified as authorities in their respective fields whenever projects requiring highly specialized knowledge for their execution are placed in priority.

How Much Should a Company Spend for Business or Management Research, and How May Production Costs Be Controlled? It would greatly simplify matters if it could be stated that there is a way of measuring the result of such work exactly and to the cent. There are some few instances which are sufficiently isolated as to permit the exact measuring of results. Generally, however, such exact measure is not possible. The value and urgent necessity of a business research, on the other hand, can and should be amply obvious before it is begun.

As long as the business research effort is looked upon rather vaguely as a necessary but somewhat nebulous whole, the obvious value of the pieces of

work are obscured. As soon, however, as the true picture of a number of urgent individual projects takes form, the view clarifies. The need for solving the most urgent of these problems is so pressing and the fact that solution will result in value amply in excess of production cost is so apparent, that the idea of stopping to attempt to estimate exact benefits is impatiently pushed aside as a retarding and non-contributing detail. In most cases, successful releases are completely infiltrated into the work of operators. It is therefore evident that any statement regarding the allegedly exact value of a release must depend upon estimate alone. This would unquestionably result in conflicting opinions that could do little or no good and would frequently do much harm. The important thing is that the research release is profitably consumed either as a useful tool or necessary material in the hands of some operator.

It is helpful to realize that business research in reality is nothing new. It is simply the application of specialization and scientific method to something that has been attempted as a sort of side line by operators and executives ever since business began. The alert operator who visits other properties, attends conventions, writes stacks of correspondence in an effort to keep informed is trying to do for himself what can be done for him much more effectively through specialization.

Research is in the nature of organized pioneering, and pioneering cannot be reduced to an exact science. Many projects known to be indispensable do not provide means for the tracing of tangible values to them. Many aviators flew out over the various oceans and never returned; yet, in the judgment of those who are developing aviation, such effort and sacrifice is necessary. And the public does not question such judgment. Today, in all progressive enterprise, some pioneering must be done. The accumulation of all knowledge is slow and costly. The wonderful prosperity of the country today is due to the Bells, the Fords, the Wrights, the Langleys, the Edisons, and to those others who could visualize demands for things which did not, at one time, exist, and which must be perfected by means of much labor, much ridicule, much sprawling effort, and much refinement. The country today is being upborne by the spirit of applied research, so why should management deny itself the advantages which intelligent study of fundamentals and their application always brings, simply because in many cases the return, though amply obvious, cannot be measured exactly in dollars and cents?

The management of the company does not waste much effort in trying to build up estimates based upon opinions as to exactly stated values concerning what are known to be intangibles merged into the general activity. It is more concerned with the selection of the projects it is anxious to have developed into tools or materials known to be badly needed, and with the certainty that the methods used in such development insure complete consumption or use.

Research effort is the result of a state of mind. It is one of management's responses to the consciousness that changing conditions may render unsound a practice of long standing. Further, that this change is accelerated by modern development and modern demand to a rapidity of movement hitherto

unknown. Approached en masse and viewed as a sort of nebulous whole made up of half-identified units, the formation of sound judgment as to exactly what to spend for business research is difficult in the extreme, if not impossible. When, however, management identifies its problems, creates something tangible to represent each one, complies with the simple necessities of determining an intelligent priority, an easy method is provided for judging both the need and the value of research projects before they go into production. In this way management is provided with a flexible, an immediate, and positive control.

PRODUCTION CONTROL OF RESEARCH PROJECTS

By C. W. WILSON, *Manager, Research Department, Pittsburgh Railways Company*

"Production" Defined. By production is meant the completion in the form of a good job of whatever is undertaken, without destructive strain on the personnel, and without waste of time, or money. Obviously production is primarily dependent upon individual competency. So much has been and is being done by competent hands to improve individual capacity, however, that, for the purpose of the moment, a personnel with satisfactory qualifications is assumed. This study is directed at those forces which, regardless of the nature of the work, help or hinder desk workers who function as parts of a coordinated group, with the object of isolating, understanding, and complying with those elements which enable a management research department more nearly to avail itself of the benefits obtained by methods similar in principle to those used in line factory production.

Sound Production Dependent upon Compliance with Fundamental Forces. The achievement of production, as previously defined, *should* be the ideal, and *is* the responsibility of any executive assuming charge. The forces which influence production are inexorable, and everyone charged with the responsibility of transforming a pay roll into production should understand that unless the helpful ones are used and the destructive ones avoided, consciously or otherwise, pay-roll waste is bound to exist.

A Pertinent Question. A pertinent question appears at this point: If non-routine work of employees whose production is the application to paper of the result of mental activity is responsive to the forces which affect production in material things, why has industry not whipped it into line on a broad scale sooner, and made it conform to the equivalent of factory practice?

The reasons are many, but it will suffice to mention three which are among the most prominent:

1. Industry has been and still is inclined to look upon work charged to non-producing overhead as essential and indispensable, but hardly worth the engineering effort necessary to provide means to conform to the few essentials required to make relatively sound production possible.

2. Managements have been disappointed so often by loudly acclaimed panaceas which were only exploited schemes based superficially on certain mechanics and which did not reach down to fundamental bed rock, that effort

in the direction of isolating and understanding sound production factors has been retarded.

3. The elusiveness and intangibility of the elements involved have offered real difficulties.

Control Made Possible by Element Identification. The forces which help and those which hinder good results in both desk-work production and factory straight-line production are, in general, the same. The fields are different, but it has been the experience of the research department where these practices are followed that once an element has been made tangible by means of the creation of something to represent it, as a matter of course it submits to the influences which control material objects.

Certain production factors have emerged as those having more than ordinary importance. Brief discussions of these follow.

Attitude of Department Head. Unless the department head approaches his work with the conviction that certain forces have to be understood, and an attempt be made to move with them or avoid them, he will neither search for nor recognize the elements which are essential to achieving the best production. He should realize that while he holds final authority in his department, his responsibility is to develop, coordinate, and lead, rather than to dominate and command. He must encourage and expand the research attitude of the department by careful development of individual opportunity and responsibility. He should endeavor in every way to stay within his personal field of coordinator and leader wherever a member of his department can possibly function as the tool his position permits him to be. As he hopes for success, he must avoid making a "bottle-neck" of himself, thereby reducing the scope of the activities of his organization to where he can personally pass on all details. Such action wastes the individual initiative of his group, which when given freedom and responsibility within definitely limited fields will, in the conscious developments of itself, carry the department forward with much greater force than it could possibly be dragged by the executive himself.

Identified Work Unit the Instrument of Control. Line factory production depends upon the controlled movement of work units. Controlled movement in any production cannot exist without something to control.

It should be emphasized that any inhibitions of complete freedom of individual thought within the limits of the scope of an assigned field is antagonistic to the very idea of research. Control is achieved through assignment to definitely bound fields, rather than to detailed direction of thought or action. If the field is so broad and the direction of the objective so obscure as to indicate the need of a survey to allocate and define an objective, that, of course, should be done. But in the field where the technique of orderly problem solution is being applied to the support of management and where technical engineers and scientists are looked upon as specialists, the objectives of most of the projects can be determined with relative ease.

The instrument of control in production development is the isolated and identified work unit. A work unit is defined as being composed of an element or a group of elements, which can be logically assigned to one individual for development. Once these units are isolated, identified, and made tangible

through the creation and by means of definitely numbered jobs to represent them, the relative ease with which the advantages, similar to those accomplished by factory line methods may be secured, is striking.

Something Tangible Should Represent Each Identified Unit. This is obvious. The form should be easily applicable to a workable plan designed to secure an orderly determination of priority.

In the research department where these methods are employed, every job which requires approximately a half day or more for completion is entered on a job ledger and numbered consecutively. It is set up according to a short, standard form which includes a statement of the job title, its objective, purpose, and the time factor. After approval of the division head under which the work falls and the department manager, the job is assigned to the employee fitted for completing it, and placed by him, under guidance of the department head, in its proper place in the selective line of the employee's work where it waits its turn for attention. No clerical work is needed in the maintenance of the priority machinery, since it is changed by simply shifting the loose leaves backward or forward.

In order to maintain complete coordination, it is necessary for the department head to authorize creation and close of each job. The responsibility for job priority never rests directly upon the employee doing the job. That is, without question, a responsibility of the management; and when such responsibility is imposed unsoundly upon the individual who is actually producing the work, his mind is bound to function less clearly under the unfair strain.

Effort is made to impress each worker with the fact that mechanics have no merit except as they meet the need of some fundamental requirement. Mechanics are but tools; means to an end. When the picture of the fundamental need becomes dim, and the tool is not instinctively reached for, once its utility is established, it becomes a menace instead of an aid. The reason so many "systems" are disappointing is because too much attention is paid to trying to meet the need of certain sets of mechanics and not enough to isolating and understanding the forces which are causing trouble.

The cost of maintaining the method of control in effect is almost negligible. An average of a half hour's typing a day, and an hour's time of the research manager's secretary, is all that is required.

Avoidable Misunderstanding Causes Extensive Pay-roll Waste. After a job is identified, the task of achieving a common understanding among all connected with the important phases of a piece of work is the first obstacle to be overcome in getting a research project into healthy motion.

The person who authorizes work in a research department should know before making an assignment:

1. The objective of the problem to be solved or the work to be done.
2. The purpose, or what the work is to be done for.
3. The requirements of presentation.
4. The time limit within which the work must be finished.

Unless the department head has a clear idea of these things he cannot expect the worker receiving the assignment and who has had less contact with the originating necessities, to guess at them.

If the amounts of money spent in doing work over because of misunderstanding on the part of workers as to what was to be done, as well as the losses incurred on account of failure to receive the needed material on time, could be known, we would probably be staggered by the immensity of the total. Assigning any non-routine work without complying with reasonable necessities of common understanding is like placing an individual at the junction of many roads with insufficient direction. Having to retrace steps and start over means waste and delay.

The possibility of misunderstanding is all the more likely because none of us speaks exactly the same language as another. Though we use similar words, we have lived into them certain individual experiences and are to an extent talking in those experiences rather than in words. Even the most careful discussions wherein all concerned honestly think that they have achieved identical mental images, often eventually prove to have resulted in misunderstanding. A forceful and well-directed attack on vagueness at the beginning establishes a precedent in each job, as well as contributes to a constructive atmosphere in the department. Therefore, it is necessary where there is a possibility of misunderstanding, to take the precaution of having the worker outline briefly in writing his conception of the major requirements of a job assigned him, and submit this outline for approval before beginning actual work. The assignor can then tell with a much greater degree of certainty whether common understanding as to essentials has been reached.

It is true that busy executives should have their requests carried out with a minimum of explanation by them, but no one objects to approving a blue print, and this procedure is but a part of the equivalent of a blue print. The necessity for exact understanding in planning material things is accepted as a matter of course. Once the saving of time and money that can be effected in desk work production by a reasonable and logical precaution of an assurance of understanding is realized, the procedure is looked upon as is any other sound production plan. It is, of course, the responsibility of the head of the research work to see that this plan is used with intelligence, requiring its application only when it is logically indicated, and not simply for the purpose of following out a set procedure. Such would be "red tape," the untiring enemy of sound production.

The supervisor should, therefore, realize that reaching the experience of the worker is his job and the first important step in his effort to improve production. It rests solidly upon the fundamental that the first requisite of being able to answer a question is to understand it.

Why Do Workers Hesitate to Ask for Explanations? Some thought should be given to the reasons why workers in subordinate positions hesitate to press questions with a superior. Human nature comes strongly to the front here. None of us wishes to appear slow of apprehension to a person who holds our economic welfare in his hands. We are all inclined to pretend to understand before we do, trusting to luck and our ability to figure things out. Knowing that this is a human trait, and a very understandable one, it is necessary that precautions be taken to counteract it.

The absence of a common ground of understanding between supervisors and workers as to what is to be done and as to what is possible and what is not, has been the ruin of countless young men of potential executive ability. It is hard to conceive of a more hopeless situation than that in which an employee finds himself when the impossible is expected of him because reasonable necessities enabling him to understand have not been complied with, and who is judged mentally inferior and lacking in capacity because of such a circumstance. The expression "What's the use?" must have first been uttered by an employee in this situation. Officials bemoaning the lack of material for high executive positions might well give some attention to the wanton crushing of budding potential ability by needless misunderstanding.

Conflicting Demand, a Powerfully Destructive Force. Another great enemy of production is conflicting or unsound demand. A conscientious worker, loaded beyond reason or good judgment and harassed by impossible time factors that would be considered ridiculous in a shop where the elements worked upon are visible, finds himself unable to deliver reasonable production in either quantity or quality. A worried mind cannot think so constructively as when unperturbed, for in addition to being burdened with a hopeless resentment because of unfair conditions which must be endured on account of economic necessity, it is instinctively defending itself from criticism. Where these conditions exist, it is not always because management is ignorant of the situation and does not vaguely deplore it, but because it fails to see how necessary and how relatively easy it is to provide each job, or important element of each job, with an identity and something tangible to represent it. No foreman expects a mechanic to repair two motors at the same time; neither will an executive expect an engineer or desk worker to accomplish the equivalent of doing two things at once if jobs are identified and placed in orderly priority for execution. From the standpoint of production development, there is no difference between subjecting a group of mental workers to conflicting demands, or to demands with impossible time factors, and committing a shop organization to produce more good jobs than is physically possible.

Of course conditions sometimes arise where there is insufficient time to do a job properly. In such cases no harm comes to an organization if this fact is accepted and the best job possible under the circumstances is all that is asked for. Such conditions are often valuable, in that they frequently develop new wells of capacity due to the stimulation which comes from a *desire to rise to an emergency for which the workers know they are in no way held responsible*. Where, however, due to conflicting demand and impossible time factors, the worker is forced to feel that his ability is being questioned unjustly, due to conditions concerning which he is helpless, destructive forces are more than likely to do tremendous damage.

Vast sums are being expended by industry for employee health maintenance and reclamation. So far as is known, no attempt has ever been made to measure the losses due to deterioration in physical health caused by worry from avoidable conflicting or impossible demands for which employees, though in no way responsible, have had to bear the brunt. The total of this cost would be extremely interesting and perhaps shocking.

If supervision has any job at all and if there is a line that distinguishes its responsibility as differing from that of the worker, it is to indicate exactly and bound the fields wherein individuals are to work.

Conflicting demand may come from many sources including actual and unforeseen emergencies, but principally from two:

1. From the individual or authority in charge who unsoundly assigns numbers of jobs with conflicting time limits. This usually places the workers in defensive positions and under the necessity of attempting to explain what really are impossibilities without actual measures to prove their cases. The cause of this condition can usually be attributed to the failure of the department manager to have a clear knowledge of the relative importance of the line of work units from which selection for priority is drawn, or to the neglect of using sufficient care in the assignment of individual jobs. The result is that the department head is faced with continual emergencies which compel frequent and ill-timed changes in his program. In either event, it is the equivalent of the repeated loading and unloading of a wagon and jerking the heads of the horses who are endeavoring to pull the load. The result is an atmosphere suggestive of deficient workmanship, and a consequent reaction of hopeless resentment on the part of the workers.

2. Conflicting demand arises from the needs of workers who must rely upon supporting individuals or specialized divisions for material needed in the prosecution of jobs assigned to them. An example is a statistical division being pressed for statistical support by a number of engineers each clamoring for service at the same time, and exerting all the personal pressure they can to get it.

Such a condition is not only the mother of confusion but also of destructive forces of great power. Unless there is a method of coordination and a logical handling of job movement through rigidly adhered to priority channels, those in charge of the specialized divisions find themselves at the mercy of conflicting demands that are demoralizing. They are supposed to maintain a practical cooperation, but it is obviously impossible.

Unless conflicting demand is made impossible, the more pressure that is put upon engineers and others who depend upon the support of specialized divisions, the more confusion results. If there is no general orderly movement as to how all jobs, supporting and otherwise, shall proceed, the engineer has no alternative but to do all he can and exert all of the influence possible to secure the material he needs. Thus, instead of a cooperative group whose thoughts are directed toward a cohesive achievement, there is an individual conflict which is seriously destructive.

The Value of a Wholesome Atmosphere. The human element is considered herein solely as part of a production machine. Reference is made to this fact because it may appear that some of the things believed to be essential might seem to unduly favor employees. It is earnestly desired, however, that there be no assumption that humanitarian impulse had undue weight in reaching the conclusions offered. On the other hand, the cold-blooded necessity of transforming a pay roll into the utmost production that can be gotten out of it has dominated. There has been, however, a serious effort properly to evaluate as many contributing factors as possible.

The question of incentives cannot be discussed here other than to emphasize the fact that only from the employee who feels he is actually working in accordance with his best personal interests can healthy production be expected. But even the most completely contented and enthusiastic worker needs the stimulus of a healthy pressure. The necessity for this pressure has not been overlooked. There is no more powerful instrument for exerting whatever pressure is required than the use of production methods where the worker has no opportunity for evasion and must work on a single work unit, rigidly held in place by a central agency for determining job priority.

Pressure is looked upon, however, as something to be fitted as is wholesome to each individual. Indiscriminate pressure is bound to be confusing and destructive. Some men work best and thrive under a pressure that would leave others confused and impotent. Whatever pressure is applied, however, should be constant and even, and free from confusing or disconcerting elements.

Life is made up of effort to overcome obstacles. Most, if not all, thought is for the purpose of solving some problem. A department should serve as a practice ground, and its work should be practice material for employees to solidify a sound technique in handling problems. Every effort should be made to keep employees continuously conscious of this. They are thus increasing their chances for success in life, which is, in general, dependent upon the ability to make more hits than misses in the effort to cope with difficulties and accomplish development.

INDUSTRIAL DIAGNOSTICIANS

By WALTER N. POLAKOV, *President, Walter N. Polakov & Company, Inc.*

To present, with any degree of clarity and brevity, as complicated a subject as that of relations between consultants and industrial executives, it seems advisable to start with a brief retrospect of the history of such relations since the science of management made its first appearance.

Upon this background it will be possible to outline the present and future relations between the consulting specialist in managerial technique, and the industrial executive, more or less objectively. The pertinent questions in this connection are:

1. Has a specialist a place in modern industry?
2. If so, what relations between the consultant and the executive would be conducive to best results?
3. What tactics and what technique should be employed under such relations?

Retrospect. The year 1903 may be fixed as an official date of birth of scientific management, because Frederick Taylor then presented before the American Society of Mechanical Engineers his paper on "Shop Management," and H. L. Gantt, his two papers on "Graphical Daily Balance in Manufacture" and on "Modifying Systems of Management," although two years

earlier he had already presented another classic on "Bonus System of Rewarding Labor."¹

The aim, the principles, and the method of these two pioneers in scientific management, were so different as to be almost antitheses. Taylor's aim was elimination of soldiering and making workmen personally efficient. Gantt's aim was elimination of waste time resulting from managerial maladjustments, and to make the executives personally efficient. Taylor's method was that of centralizing and functionalizing control, while Gantt's method was that of giving necessary information and authority to the shop foreman. These cardinal distinctions flowed, with logical necessity, from the principles postulated by each, viz.: the autocratic control postulated by Taylor, in contradistinction to democratic leadership postulated by Gantt.

The technique and the mechanism devised in each case were equally dissimilar, but the practice of introducing them involved, in both cases, actual installation of method and training of personnel, for at that time, naturally, there was no contingent of men in the employ of the firms undergoing this reorganization, versed in the technique, or even fully familiar with the principles involved.

The job before these and other pioneers in the field of scientific management obviously involved the task of installing the whole system; of demonstrating that it worked; of overcoming inertia; of breaking precedent; of displacing tradition. Like pioneers they had to clear the ground before they could till; they had to wreck the old building before they could erect a new edifice. They may have appeared intolerant and dictatorial, almost fanatical, without being at all so by nature. They had the vision, the message, and the means to realize it; but the men with whom they had to work, often the executives of the client firms, had only a scant idea of either principle or methods. These executives were chiefly after quick and spectacular results. They were the executives of an old school, prone to be autocratic and dictatorial, having little patience for research, often led in their decisions, if not by personal whims, then by debates and votes. The habit of relying on tests and computations had not as yet been formed.

In those days, every detail of installation work had to be done by the organizer, by the expert, and as these were too complicated and numerous for one man, consultants had to have a staff of assistants and understudies; the larger the staff, the greater was the impatience of the client firm for the financial returns.

The "Efficiency Expert." The financial returns were not slow in coming. The classic examples of greatly increased efficiency under the scientific reorganization, promptly tempted scores of untrained, self-styled efficiency experts to offer their services, and knowing little beyond the rudiments of time studies, they pinned their faith on imitating forms, blanks and collections of tricks, by means of which they hoped to place industry on a higher plane of efficiency.

The reaction against this fad was not long in coming. A cartoon on the editorial page of a well known contemporary newspaper recorded the public

¹ American Society of Mechanical Engineers, 1901.

attitude at the time. Asked the girl, "What's an efficiency expert, Harry?" and the man replied, "Oh, anybody who can teach you how to do something he doesn't know anything about himself."

As early as 1913, Gantt voiced the more serious attitude against this movement in these unmistakable words:

The man, who undertakes to introduce scientific management and pins his faith to rules and the use of forms and blanks without thoroughly comprehending the principles upon which it is based, will fail.

The antagonism against the indiscriminate and incompetent use of the stop watch found its expression in the act forbidding the time studies on government employees.

The well-known investigations conducted by various civic and political bodies and capable investigators, such as J. P. Frey, Louis Brandeis, and others, finally succeeded, in a large measure, in checking the activities of self-styled imitators and so-called efficiency experts, who frequently had no other background than a smattering of accounting or office experience.

Demand for Staff Engineers. As the new movement was living through this period of trials and tribulations, the undisputable benefits of management engineering to industry during the first quarter of the century became apparent not only in the isolated cases of individual concerns, which changed their mode of management, but in the industry as a whole. This true value of the principles of scientific management applied to industry, and the tangible results accomplished by serious men in many well known instances, created a definite and insistent demand on the part of industrial executives for competent men, thoroughly trained for detail work in industrial engineering and management engineering. Firms of efficiency engineers emerged, with large staffs of first-, second-, and third-rate men and the profession ran the risk of becoming commercialized, assuming the complexion of "contractors." This period was short and large organizations of such nature were gradually disbanded, for economically, psychologically, and ethically, they were moribund.

Thus it behooved the engineering colleges and business schools to prepare and provide such cadres of detail-study men to assist the executives. Soon men with appropriate diplomas appeared on the labor market, and found employment in the concerns who were in the habit of buying ready-made goods on the cheap market.

This created a new phase in the situation, insofar as relations between specialists and executives were concerned. A college-graduate management or industrial engineer, even if well informed as far as textbooks and laboratory work are concerned, naturally had little or no practical experience. At the same time, their avowed aim was to revamp and improve the most important and complicated department of all the industrial activities, namely, that of organization of management. The internal contradiction of the situation was rapidly apparent. On the one hand, the executive, employing the college-graduate industrial engineer, still had to dictate to him the policies and define the principles and the tactics, expecting him merely to dig into his bag of tricks to solve this or that isolated problem. On the other hand, the col-

lege-graduate management engineer, by virtue of his job, had to criticize his own boss, or even to expose his employer's incompetence. Small wonder that these attempts at self-reformation left many bitter memories, and only as these young college men themselves became responsible executives, did the anomaly of the relations begin to adjust itself.

Present Need for Specialists. The complex relations existing in modern industry can hardly be compared with relatively simple set-up of manufacture of half a century or even twenty years ago. The technology involved in most processes developed to a point where each small branch can hardly be mastered in one's life time, especially in view of rapid and ever increasing progress. The personnel problems likewise grew in complexity. Social and recreative activities, hygiene and safety, including ventilation, illumination, proper postures, psychoanalysis, and so on, are themselves almost infinitely complicated. Economic relations, wage payments and incentive plans, buying and selling, financing, accounting, etc., is but another little corner of the field, but how immense! And now the managerial technique itself—that of coordinating the functions, influencing the actions, setting tasks, scheduling production, recording accomplishment, and so on—is indeed a rich and vast field for specialization.

For an executive in modern industry, confronted with such problems in the specific relation to his particular line, even to assume that he may know all and be reasonably successful under the competitive conditions, growing keener every day, is to exhibit a lack of sanity. He must depend upon advice and information provided by specialists in this or that branch. The inevitable tendency of larger corporations of today is, therefore, toward research and permanent employment of specialists in various branches of technology. The smaller corporations, obviously, cannot afford the overhead of a large staff of specialists, permanently employed. So far as technology of processes are concerned, they, perforce, limit their activities to avoid spreading over a large field, but from time to time, whether because of the progress made by their competitors, or due to the market pressure, they are forced to make further improvements or add a new line of product, and the resort to a specialist's advice is inevitable. Even if we assume a corporation of gigantic proportions, with unlimited financial resources that could not be overtaxed with an army of specialists and experts, the situation cannot be altered in such an instance. For, having in their permanent employ the staff of specialists, whose services may be called for but seldom, these long intervals between their activities are bound to diminish the value of their service in the same way as the dexterity of a musician or a doctor diminishes if he remains for a long time without practice.

In a word, modern industry today largely depends upon the knowledge of highly specialized men but only exceptionally large corporations can keep them permanently engaged. Hence—a need for the consulting specialist.

Thus the very nature of our rapidly developing industries, continually pushed forward by great discoveries of science, makes the employment of specialists today more urgent than ever it was, and what is true in respect to specialists in technology, is far more true in respect to specialists in managerial analyses and technique, for the sciences from which the management

specialist derives his tools, are both younger than technical branches, and make faster, though probably less spectacular advances, by leaps and bounds.

This fact is generally recognized by the industrial leaders of vision. The executive positions today are more frequently filled by engineers than by lawyers, bankers, and men vaguely defined as "business men." These, being specialists well versed in the nature of production or operations in which their firms are engaged do fully appreciate the worth of specialized knowledge. The same applies to the superintendents, plant engineers and foremen. It is their desire to secure the results compatible with their knowledge and ability that would be to their credit. Hence they welcome any effective measure to eliminate all administrative, managerial maladjustments that may hamper their free and efficient functioning. Hence they welcome the services of a competent management consultant within whose province it is to remove the obstacles hampering their work.

Moreover, under these changed circumstances the executive of today no longer fears, as his old-fashioned predecessor did, that an invitation of a management specialist would cast a reflection upon his own ability; quite the contrary, having no respect for "jacks of all trades," they have no patience with amateurish dabbling with managerial functions and prefer to "call in a specialist."

Even if an executive is not a production man and technologist, but a management specialist himself, the very fact that he holds an executive position puts before him a dilemma—either to capitalize the old stock in trade, and base his decisions upon the rule he has worked out sometime ago, when he had time to study problems as they were then and there, or to defer the executive action until he could arrange enough leisure and sufficiently disentangle himself from daily problems, to study this or that situation with the thoroughness it demands. Obviously, neither horn of the dilemma is an adequate procedure for a man who realizes his responsibility to the firm that vested him with authority. Neither can he, in the important matters, relegate fact finding, thorough study, and careful coordination to some junior member of his staff. In other words, there is no alternative but to "call in a specialist."

Under this changed industrial set-up, it is reasonable to expect that the functions of a management consultant and his relation to the executive would be different from those of yesterday.

New Form of Relations between Executive and Consultant. Let us consider now the form of relation between management consultant and industrial executive that is forced upon them by this new industrial orientation. To begin with, a few terms should be defined in order to gain clarity and uniformity of understanding.

In the first place, let us define management as a process of releasing and directing human energies toward attaining a definite goal. By accepting this definition, the danger of confusing management with a body of certain rules, forms, and practices, will be avoided. Management, as a great form of human activity, thus defined becomes comparable to the term "science," which likewise is not a body of knowledge, nor a record of achievements, but a process of acquiring ever more and more complete and exact knowledge, and

establishing categorical propositions. Scientific management, therefore, will be that kind of a process of directing human efforts which employs the scientific method, and the management specialist, hence, could be defined as one who specializes in application of modern scientific method to the solution of the problems arising in the process of management. Similarly, the term of "industrial executive" denotes a person who executes, or causes to be executed, the managerial programs.

It is clear, therefore, that the relation of the management consultant to the executive is that of rendering counsel. The nature and the scope of the counsel is, obviously, determined by the competence of the consultant in a specific field. Stated in other words, the task of a consultant is to analyze a problem, and to advise as to the best course of procedure, while the task of an executive is to execute the plan. Thus boldly stated, the relations may be misinterpreted to mean that the executive is not expected to do anything but what he is told to do. Nothing can be further from the truth. By being informed as to accurate facts, his freedom of action is no more limited than the freedom of action of a fireman is limited by the pressure gage, or that of a passerby by the sign, "Wet Paint." By neglecting the competent counsel, we are licentious—not free, and leave many a finger print on the fresh paint. By observing it, we exercise the freedom of acting rationally. The fascination, the joy and satisfaction in the executive work, and pride in the accomplishment, lies not in securing of information, but securing results by acting upon reliable information.

Hence, in his relation to the client firm and its executives, the management consultant does not assume any of the executive functions. Even as a medical consultant, he cooperates with his colleagues on the hospital staff, or holds a council with the family physician. He realizes that their knowledge of this specific case, that their evaluation of certain symptoms, that their familiarity with constitutional weaknesses and idiosyncrasies, are of paramount importance for arriving at a correct diagnosis.

When diagnosis is thus made, the next move is to prescribe, but a consulting physician does not perform an operation indicated, neither does he administer a patient's diet and general regimen. This parallel is true again in case of a management consultant. Once troubles are disclosed, their relative importance established and procedure agreed upon with the client's experts, it is up to the executives and their staff to institute such changes as may be indicated. It is their function and responsibility; it is their pride to attain success; it is their duty to see to it that the plant is functioning right, and, above all, it is to be remembered that they are experts in their respective lines. To interfere with their betterment work would be comparable to interfering with parents in bringing up their children. It is to hurt their feelings and accomplish no good.

But a consultant does not yet fold his hands. He watches carefully the records of progress and further diagnoses its indications. The keynote of this work may be termed as "preventive engineering." The elimination of waste is important, but it is of no avail unless the means are evolved for preventing their recurrence in the future. The elimination of administrative maladjustments and incompetence is important, but it is of no avail unless the

organization is permeated with principles that will prevent sliding back into the old rut. In the past there was no alternative for the management specialist but to bring along a staff of his own to make these studies and actually install the new method in every detail, whether with or without the cooperation of minor executives of the client firm. Like a mediaeval doctor, he had to be his own assistant, the barber, the nurse, the masseur, and the druggist.

It was only natural that under the old forms of relations, the "systems" installed by the outsiders would eventually disintegrate and fall into disrepute. The cause for it can easily be found in the old contract system of "installing management methods." Disintegration was usually due, first, to the fact that whatever was done was considered by the members of the client firm as an importation and imposition. It was something foreign to the personnel of the concern; its reason and advantages were perhaps not clearly understood; its operation was, for a long time, unfamiliar to them, and hence appeared as cumbersome or useless. When these new functions were finally turned over by the staff of the expert to the personnel of the client concern, they were most likely performed perfunctorily, imperfectly, and benefits therefrom were slight, if any, until these "fancy" things were finally abandoned. Second, whatever may have been done by the outsiders was naturally subject to "watchful waiting," sometimes provoking criticisms, at times snickers, and perhaps even antagonism or open hostility. Thus a measure, however good and sound, had psychologically a negative reaction; the personnel could never take pride in it, for it could not regard the improvements as its own achievement. Consequently, having no tie of any kind—mental or emotional—to the new fangled importation, the personnel, as well as the staff, if they were earnestly seeking better ways, continued to try now one and now another new stunt, until the whole managerial structure became full of patches, props, and dabs of paint, incoherent, poorly dovetailed, sometimes appearing as a most curious conglomeration of strange ideas and devices.

With the new relations of a consultant to the executives and the staff of the client firm, such gruesome fate is quite unlikely, for once a proper functioning of management is organized, it forms an organic whole with the entire structure of the firm.

Today, with rare exceptions, the managerial force of a client concern comprises members quite competent to carry on both studies and installations according to specifications and under the general guidance on the part of the counsel, whose functions are thus more comparable now to those of a medical specialist diagnostician. In this respect, the position of management consultant has changed greatly. He is no longer a contractor, who guarantees to secure results. He is strictly a professional man, who diagnoses the situation, and prescribes the régime and treatment.

"Catalytic" Action and Tactics. There is another big phase of the relation between the management consultant and the staff of the client firm, which may be called, for the want of a better expression, a "mental catalysis." The very fact that the firm has engaged the services of a reputable engineer acts as a subtle, yet often powerful agency for the release of dormant energies, valuable ideas, greater interest in one's work, fuller cooperation with the main

office and keener competition among departments in producing commendable results. It is indeed very similar to catalytic action speeding up or promoting reactions without the catalyst itself being absorbed or changed.

This stimulating, catalytic faculty of a consultant is almost as essential for the success of the undertaking as another, namely, tactical ability of the consultant to disclaim his "authority" to impose anything, but to establish the relation of confidence, for to understand is to be understood, and, it cannot be overstated, the major part of his work is with the human element, not with machinery, processes and records. When this is accomplished, the executives and the rest of the client's personnel prove themselves in general qualified to introduce with understanding all the desirable changes and improvements. Of especial importance, is the fact that the good results thus accomplished by members of the organization furnish the personnel with interest and pride in their work and tend to perpetuate a high level of efficiency, once it is attained by them.

Indeed, in numerous instances the executives and the engineers of client-firms proudly present before professional societies papers describing the progress made, or publish articles, freely giving credit to consultants. Even with gradual change of the entire personnel of some departments, the once introduced amelioration persists by tradition and years after the introduction the habits of industry and high standard could be found, if anything, further advanced.

Methods of the Consultant. Viewing the work of a management consultant from another angle—that of his internal working process—it appears today vastly different from the well beaten path of the past.

The management consultant, content with the old technique and old processes of thought is as much a back number as a voodoo doctor or alchemist. They are still "scientific" in a sense that they aim to establish categorical propositions but they are establishing them largely upon the premises since rejected as fallacious.

Today a consultant management specialist, in order to be a diagnostician, should be primarily a logician. His first step is that of detecting the postulates upon which a given managerial doctrine is based. If the client-executive holds doctrines logically incompatible with these involved in the modern theory of management, he may be left alone as doctors leave alone the "incurable"—the best that can be done for him is to allay the pain.

If there is a hope, *i.e.*, if a client-executive maintains a doctrine with undefined or assumed terms which can be clarified, defined and proved for him, then the rest is a process of a logical necessity and the results follow inevitably, as a matter of destiny—a logical destiny, of course.

The next step is then to stimulate the creative thought of the client-executives. By that we mean to set their imaginative power to work, to visualize the desired course and the aim. Third comes the long and painstaking logical analysis of "what is" or present inconsistencies in practices, methods and results. These must be proved false or meaningless (not merely stated) and from that proof the new course will take form.

Then comes the fourth stage of the "inside" work—that of coordinating and directing efforts toward the desired goal. In this work nothing is kept sacred or unalterable save consistency of actions with the defined aim.

It goes almost without saying that the consultant's job of "directing efforts" is in itself a two-stage process. The first stage may be termed as priming, during which, by means of broad discussion of principles, illustrated by similar applications elsewhere, and careful demonstration of adaptability under the particular individual conditions, the recommended method is presented to the executives, and its working advantages are clearly understood in the main, and the desire to inaugurate this change is created.

The second stage of this cycle is the working out in all details a complete specification in writing of actual adaptation of the method recommended, with the detailed recommendations as to persons in charge, their duties, responsibilities, process of work, special equipment, means of recording and accounting, procedure of follow-up and maintenance, methods of computation or inspection, etc.

Of course in some instances the first stage is unnecessary, while in some other instances the second stage can be safely left to the executives themselves, depending upon the nature of the measure and the characteristics of personnel affected. Here is again the apt parallel with the practice in the medical profession. The specialist in preventive medicine prescribes a certain immunization, a method of application, for instance, of toxin antitoxin, and in some cases, perhaps, gives the complete instructions as to preparation of this antitoxin. But he does not usually himself perform the injection or vaccination. Even in curative medicine, the physician prescribes in all details the compounding of drugs, but it is left to a pharmacist to fill the formula, and to the nurse to administer it to the patient.

From this brief sketch it becomes apparent that the present-day management consultant acts in four departments of human endeavor:

1. As a logician he practices the art of critique.
2. As a psychologist he exercises power of suggestion.
3. As an engineer he directs forces and devises means.
4. As an economist he evaluates results.

The question, how the functions of the consultant can be performed, is now practically answered. It is evident that such an enterprise as diagnosis of industrial troubles and direction of their elimination is a work for an individual, not for an impersonal institution or a group of men organized for such service by a resourceful entrepreneur. Such work is based essentially on personal contact, on good judgment, mutual confidence, and hearty cooperation.

The "short cuts," cut and dried rules, ready-made formulas and whole array of stunts and tricks could be taught by a correspondence school, temptingly narrated in magazine articles and related at the meetings and in the clubrooms, but they do not constitute the substance of that service which is expected of a consultant—an industrial diagnosis.

The Industrial Diagnosis. Since he is primarily a diagnostician, the first function of a consultant toward indicating the practical procedure, is to establish definitely what interferes with the best possible performance of the proper functions of an organization and how to remove the obstacles.

This demands, at the outset, a triple analysis:

1. Are the orders filled on time and in proper sequence? If not, why not?
2. Is the equipment used or idle? If idle, why?
3. Are the men doing their work in the best possible way? If not, why not?

These queries lead to further inquiries:

If part of the equipment is idle part of the time, why? Is it because of lack of orders, lack of material, lack of men, lack of power, poor repair? How much does it cost to own idle equipment, and what effect has it on the cost of product? What part of the idleness is avoidable and how can it be avoided?

If men are not doing a "fair day's work," why? Is it because there is not enough work, or lack of work material, or machine breakdown, or poor tools and supplies, or lack of instruction, or poor practice? Is there any measure to gage the output of each man or each group? If not, why not? If quality and not quantity of work is the deciding factor, is there any standard to compare with? Are there any incentives to do more or better work?

Such are but a few general questions to start with; but the consultant is neither a detective nor a mere record clerk. He formulates the questions that are pertinent; then he proposes the technique of securing dependable answers, but it is the executive's task to furnish the requisite data. A medical consultant does not doubt the family physician's report as to patient's pulse, temperature, blood pressure, urine analysis, etc., as it has been observed for weeks—he draws his conclusions and states probable cause. A management consultant should not attempt any more, for otherwise it may be regarded as an insolent lack of confidence in the intelligence of the client's staff.

At last he outlines the procedure, the régime as it were, of removing obstacles—i.e., inaugurating the practice of the "preventive engineering."

The most effective tool as yet devised for the practice of "preventive engineering" and direction of production is based on the four-dimensional, or non-Euclidean system of chart analysis, first described by the late H. L. Gantt, and further developed by Wallace Clark and the writer.

With the aid of charts, simple enough in their technique to be handled by departmental foremen and their clerks, most of the work that would have to be done by "staff" is so much simplified as to require no additional help.

True enough, in a number of industrial establishments it is sometimes difficult to find men who are not overburdened by their routine duties to a point where it seems impossible to ask them to do a thing more or to pause a minute for a mature and quiet thinking over the situation. But bringing in several or even a score of "assistants" for doing detail work of installation of a new method means often a disruption of an organization, and it is far better to employ directly capable men who, being free from routine duties, could work without hindrance under the consultant's guidance.

Group Consultations. There is one more peculiar form, or rather a variety of form, of relation between the client firm and consulting specialists. We have in mind the so-called group consultation. What is it, and how does it work?

Consider a firm that has come to realize that their accounts do not disclose with adequate clarity the sources of their troubles; that they have also learned of their competitors having just developed a new process; that they know that their own power department is lame and that their wrapping is being criticized on the market, in addition to a certain conviction that their managerial technique is antiquated and many of their minor executives and other employees are irritable and perhaps misplaced.

Can any one specialist help them competently in all these lines? Decidedly not!

Such a situation would obviously demand group treatment. An accountant will have to reshape the system of accounting; a chemist will have to surpass by his research the competitive improvement; a power engineer to modernize the power plant methods and equipment; a machine designer to develop an automatic wrapping machine, and a psychiatrist to analyze the misplaced and irritated employees.

Can all that be done by all these men, however competent, independently of one another? Such a fortunate outcome would be highly improbable, for an accountant may not be informed as to new rearrangement of processes and abolition of some departments and operations as the result of work of a chemical technologist; the power man may overlook the proposed change in the demand for this or that form of power; the psychiatrist may try to allay the trouble in the department which is about to be abolished; while the machine designer may overestimate, or otherwise, the future output. Their work, of necessity, should be carefully coordinated, preplanned and scheduled. All pertinent information should be made available and the relative importance of each trouble accurately evaluated. Such function may be performed by the chief executive of the client concern, but, to do so, he would have to resign as the executive to devote his undivided time and attention to direct this reorganization. A specialist in management installation would, most assuredly, be the man to assume the responsibility for such coordination of work of a group of specialists.

But, if so, a question may be asked: Is it not reasonable to expect that a group of specialists in such various branches of industrial betterment may be permanently incorporated to be ready to render their co-ordinated services? Such an assumption is not warranted by fact. In order to render satisfactory services each member of this group of specialists should command the confidence of the client, *i.e.*, should be selected by him, not by an entrepreneur. Then again, men of great experience and professional standing are not available for regular employment by a consulting firm, placed on the pay roll, subject to regulations and discipline, etc. Moreover, a group like this, even if assembled and working smoothly, must be continually kept busy, obviously no need for all of them will be present in every case. This would involve national advertisement, extensive solicitations and other heavy sales expenses. Leaving aside the question of professional ethics involved in such salesmanship, the overhead would be staggering.

Yet it is undeniable that the complexity of present-day industrial problems demands specialists—advisers—and with the rapid development of science

and equally rapid expansion of industry no one specialist could render competent service in the multitude of branches.

Summary. To sum up the salient points of this brief outline of relations between management consultants and industrial executives, the trend appears historically away from the relation of a contractor undertaking an installation and toward diagnosing professionally the causes of troubles and advising the course to be followed by executives. The arguments favoring this trend actually observed in practice are: economically that it is more efficient to secure competent advice and scientifically correct analysis and prescription than to blunder accidentally into the correct path after much floundering around, or to fit in a practice developed elsewhere; socially, that with complexity of present-day industrial relations and great development of technical and other sciences specialization within specialty is inevitable and appears the safest way to success; psychologically, that the more competent is a man in his own sphere the more anxious he is to consult with competent men in another field; that practice wished upon is less likely to be followed than one developed in friendly cooperation; that such joint development of improved managerial procedure stimulates striving for perfection as catalysts stimulate chemical reactions.

The recorded facts concerning such a mode of relations indicate their soundness in so far as such new managerial technique and its results frequently are reported by executives in press or before professional meetings with due pride and the new practice is invariably retained in use, perpetuating itself for as long as records reach back.

Professionally such relations lead to the establishment of a new branch of engineering and managerial science—we call it “preventive engineering”—which involves precise logico-mathematical method and aims at the prevention of various forms of industrial waste rather than the cure of this or that maladjustment or ill practice in each single instance.

THE ECONOMIST AS AN AID TO MANAGEMENT

BY L. D. H. WELD, *Director of Research, McCann-Erickson Company*

There are economists and economists. Their value to business concerns depends both on their personalities and on their particular lines of training or specialization. In a sense, all economists are an aid to business, whether they are engaged in university teaching and research, or whether they have forsaken the academic halls and cast their lots with business houses. Those who are engaged in university work are gradually formulating more and more fundamental principles that underlie business organization and methods, and they are sending out more and more young men who have an equipment of economic knowledge that makes them better business men. It is the economist who goes into business, however, with whom this paper deals.

Economics is a big and broad science. It embraces a number of different branches or divisions, and it is beyond the power of any one man to be an expert or authority in all of them. Just because a man is branded as an “economist” does not mean that he would be of value to the management of

any particular business house. His potential value depends on his field of specialization and on the needs of the business house.

Different Types of Economists. It is therefore time to begin to differentiate between the different kinds of economists, the types of work that they are equipped to undertake, and how they may be of value to different kinds of business houses.

There is, for example, the specialist in economic theory, the man who gives his time and thought to teaching and speculating on the theory of value and prices, the distribution of wealth among capitalists, wage earners, and land owners, etc. He is likely to be of very little direct value to a business concern. Very few of this type leave their academic surroundings. They are not often called into the business world. They are doing valuable work where they are—some of them, at least—but they are a more or less detached lot, and know little of the practical aspects and problems of a going business concern.

There is the economist who has specialized in money and banking. The average manufacturing or commercial house has little need of such a specialist. The best place for him, outside of academic circles, is with a bank. And there are many banks in the United States that have employed such men. They are used in different ways, however. Some build up service departments that are helpful to customers; some specialize on the trend of business conditions and the movements of stock and bond prices and money rates, so as to help the bank in its investment and loaning policies; others specialize on the analysis of different industries and the financial conditions of individual companies, so as to help determine the amount that may safely be loaned to them.

Then there is the economist who specializes in labor problems. He is sometimes engaged by a business house to help in the handling of personnel problems. There is also the economist who specializes in accounting, and he likewise is frequently of value to a business house in his particular field of activity.

The economists who may be of greatest value to the management of a business house, however, are those who have specialized in statistics or in business organization and administration, or in both.

Types of Statisticians. It may be said that there are three kinds of statisticians: compilers of figures, economic statisticians, and mathematical statisticians. Compilers of figures may be found in most business houses. They are often located in, or have originated in, the accounting department. They are men who have shown natural aptitudes for tabulation of figures and records wanted by the executives of the company. Their work is of value, but they are not statisticians in the true sense of the word. They are merely supplying the raw material which the true statistician must analyze and interpret.

The economic statistician is the man who has had fundamental training in economics, but who has specialized in statistical theory and method. He studies statistical method from an economic point of view. If his training in economics has given him sound views on money and banking, on business organization and methods, on advertising and selling, etc., he is the man who can be of value to the management of a business house.

The mathematical statistician is the one who approaches the science of statistics through the study of mathematics. He is interested in statistics because of his love of juggling figures through the use of the methods and formulae of higher mathematics. He generally knows little of economics or of business processes. He has much of value for the economic statistician, and the two together might make a good team; but the mathematical statistician can be of little direct value to a business house, except as actuary for an insurance company, unless he has the opportunity and the disposition to overcome his lack of knowledge of economics and business methods. There are men who have done this successfully.

It is difficult to draw the line between the economic statistician and the business economist, because each must have a wide knowledge in the field of the other. No statistician can be of the greatest possible benefit to a business house, unless he is well grounded in business methods, sales policies, etc. Likewise, the business economist can not get very far without having recourse to a generous use of statistics. It will therefore be possible to treat the two together, in trying to answer the question: How can the economist be an aid to management? It is understood that we mean the economist who has a foundation of general economics, but who has given special attention to problems of business organization, sales and advertising policy, etc., and who at the same time has a knowledge of statistical methods.

Where the Economist Can Help. The principal lines of work in which the economist may be of value to the management of a large manufacturing or mercantile concern are as follows: (1) sales research, (2) relation to general business conditions, (3) raw material markets, (4) labor policy, (5) relations with the government and the public, (6) advice on general economic problems, (7) foreign trade policy, (8) organization matters, (9) budgetary control, (10) financial policy, (11) general statistics.

This looks like a formidable array of activities for an economist or for a research or statistical department. There are probably no business houses that are seeking expert advice from economists on all of these matters.

The most important matters in which the economist can be of value are the first two—sales research and general business conditions—and it is worth while to analyze more closely the possibilities under these two headings.

Under sales research there are four principal fields of activity, as follows:

1. Market surveys.
2. Consumption by districts.
3. Price trends and policies.
4. Analysis of internal statistics.

Market Surveys. Market surveys involve field work in order to determine such things as percentage of retail distribution, consumer and retailer preference, character of competition, etc., etc. The object of such surveys is to determine the best sales method or to determine the best advertising policy, or both.

For example, the commercial research department of Swift & Company was called on to make a survey of a residential district near Chicago in order to determine whether the company should establish a branch sales house in

that section. This meant a personal visit to practically all dealers, finding out the total amount of various products handled, the percentage bought, and who the principal competitors were. It was possible to estimate the total consuming capacity of the territory, the percentage that they ought to be able to get, and the amount of territory that should be included in order to yield enough volume to make a branch house pay.

Practically all large business houses have similar problems. They want to know whether a certain territory should be covered more intensively; whether sales should be direct or through jobbers; whether exclusive jobbers or exclusive dealers should be used.

Consumption by Districts. This means the determination of sales potentials by geographic districts. It does not necessarily mean personal calls on jobbers, retailers, or consumers. Rather it is a development of a statistical measuring stick, or a combination of measuring sticks, in order to determine consumptive capacity. The objects of such studies are, first, to compare actual sales results against possibilities, and second, to furnish a basis for sales quotas.

Sales quotas are coming to be recognized as a valuable aid in sales planning and in the payment of individual salesmen, but it is difficult to determine fair quotas. This is a field where much work needs to be done. There is no uniform method that will fit all industries. Each company has to work out its own method of determining sales quotas. There is usually no single measure that will yield accurate results, and the problem is to find the best combination of measure, such as per capita consumption, income tax returns, number of automobiles, number of telephones, rural and urban population, foreign and native born, etc.¹

The problem is to find the best combination of three or four of these available statistical measures, and the best way of combining them so as to get the most accurate measure of sales possibilities. The method must be simple and understandable, so that it will be accepted by department managers and salesmen.

Price Trends and Policies. This links up with the subject of general business conditions, that will be discussed below. It includes a study of seasonal variations and the possibility of ironing out the sales throughout the year.

Analysis of Internal Statistics. Every business concern keeps sales and sales cost statistics to a certain extent, but a statistical or research department can analyze and graph these figures so as to enhance their value greatly. Sales figures should be analyzed by sections, over periods of time, and by individual customers. Sales costs should be analyzed for the business as a whole, by branches, by departments, etc. Analysis of advertising results also falls under this general heading.

General Business Conditions. Business executives are paying more and more attention to general business conditions, and their relation to the particular industry or house which they represent. The business cycle has come

¹ The author has developed a method of measuring sales possibilities by using the statistical principle of correlation. This method is described in a series of seven articles in successive issues of *Printers' Ink* beginning January 31, 1930.

to be an important phenomenon that must be reckoned with in formulating business policy. Executives themselves rarely have the time or statistical knowledge to study this matter thoroughly or scientifically, and trained economists can be of great help to them. True, there are economic and statistical services that they may follow—some good and some poor. But the various statistical services do not always agree with each other, and it requires a careful comparison and appraisal of the different services in order to reach an intelligent opinion as to the probable future trend of the general business curve.

Furthermore, special studies are necessary within a business house in order to determine its relation to the business cycle. The price of hides anticipates general business conditions in its up turns and down turns; the price of steel lags a little behind. Some businesses are affected more adversely than others by industrial depression. All these things could be studied, with a view of helping executives decide on such questions as the following:

1. *Purchasing Policy.* Goods may be bought for considerable periods in advance if the industrial outlook is good. Otherwise, they should be bought from hand to mouth, and at certain stages in the business cycle purchases and plant production may be curtailed to advantage.

2. *Sales Policy.* When a period of rising prices is anticipated, there is no need of sacrificing goods in order to move them. When there are indications that the crest of a prosperity wave is about to be reached, goods should be moved rapidly, and when prices start downward, after a period of real inflation, goods should be sacrificed, so as to avoid heavier losses in the future.

3. *Storage Policy.* In the case of seasonal goods, the quantity put into storage, and the price that one can afford to pay, depends largely on the probable general business situation at the time of removal. This applies to such products as cured pork, butter, and eggs.

4. *Financing Policy.* A study of business conditions, and especially of the course of bond prices and interest rates, is invaluable in determining the proper policy to pursue in the issuance of stocks and bonds and the best date of maturity of bonds.

5. *Construction Policy.* Boom times are likely to lead business men to use their profits in building new plants, or extensions to old ones. At such a time building materials and labor are high and by the time the improvements are completed, an industrial depression may have developed. This requires expert study and planning.

Let it not be thought from what has been said that definite answers can be continuously given to all the problems mentioned. Business men always have to plan ahead in all these matters, but in the past they have had to rely principally on guess work. Enough progress has been made in the scientific study of business cycles at least to help substantially in formulating proper policies. The business manager, who ignores this fact, is at a disadvantage as compared with his more scientific competitors.

Labor Policies. The economist, with his outside point of view, can be of considerable help in formulating policies which have to do with personnel administration, management of welfare work, etc., and he can supply data on wage rates, and cost of living, which are invaluable in the adjustment of wages.

Another field of endeavor which is closely affiliated with labor problems is dissemination of economic facts and principles among employees. One of the greatest needs of the day is the education of the public along economic lines. This really ought to be done by some large national organization, but must also be done by individual business houses among their own employees, through plant papers, leaflets, and placards, meetings with foremen and employee representatives, etc. Relations with employees may be improved by giving them correct information about the profits of industry and their relation to wages, the relation of one industry to another, the value of large-scale production, etc., etc. The economist can be of great help in this kind of work, although if left entirely to himself the material that he prepares is likely to be too abstract and unattractive for effective use.

Relations with the Government and the Public. This field of activity is of importance to relatively few industries, but it is of very great importance to those few. The railroads and other public utility companies need to be interpreted to the public from an economic point of view. The same may be said of the steel industry, the oil industry, and the packing industry.

Other fields of activity in which the economist may be an aid to management may be described very briefly. As for general economic problems, there are questions of tariff, attitude on immigration, taxation, child labor laws, etc., on which business executives need advice. With regard to foreign trade policy, there are questions of foreign exchange, whether goods should be exported or forced onto the domestic market, to what extent advertising should be done in foreign countries, and the extent to which a manufacturer should develop his own foreign sales organization. The value of an economist's advice on organization matters, budgetary control, financial matters, and in the compilation and dissemination of general statistics, requires no comment.

Research Department. Although a single economist might be of value in an advisory capacity on many of the problems outlined above, his activities ordinarily involve a considerable amount of research work. This means that he must develop a corps of assistants, especially if any considerable amount of statistical work is to be done. The question arises as to the proper place for such a department within the organization, and the name that the department should have.

As for its position within an organization, the department should report direct to the president, or to a vice-president or general manager. Even if the work consists entirely of sales research, the department should not be under the supervision of the sales manager—at least not under the ordinary type of sales manager. It would be all right in this case to come under the jurisdiction of a vice president in charge of sales. The point is that if such a department comes directly under the supervision of the sales manager, the findings and recommendations are likely to be prejudiced and carry less weight with the executives.

There can be no doubt but that economists are in greater and greater demand among business houses. The universities are not turning out enough of the right kind of men in this field. They are helping to supply the need, although most of the men from these schools have an insufficient background

of general economics. Business executives are learning to appreciate the value of sound economic advice and the demand for men with economic training is bound to increase in the future.

TRAFFIC MANAGEMENT

BY DABNEY T. WARING, *Traffic Consultant*

Functions, General. Many executives consider their traffic department of value only in handling shipping details, such as the preparation of shipping papers and filing of claims, and are guided by this thought in its creation and organization. As a matter of fact its value and the field of its activities depend almost entirely on its personnel. Properly managed and equipped, the traffic department is of inestimable value to an industry and at no time in our history has this been so manifest as today. Its value to a small industry is the same, relatively, as to our largest corporations and frequently a firm's continued success, or even its very existence, depends on the functioning of its traffic department or traffic service.

Our transportation system and transportation costs are now undergoing drastic changes. Our waterways and highways have in recent years developed into important arteries of commerce and our freight rate structure is being taken apart and remade. Our industrial map, for transportation reasons, is constantly changing. The importance, therefore, of keeping fully informed with respect to these vital matters is at once apparent and the traffic manager or advisor is the only reliable medium through which it may be done. The field of traffic management, or traffic profession as it is now generally called, is necessarily one for the specialist and is continually broadening in its scope. It is one of which the industrial executive is generally in almost complete ignorance. He is usually resigned to his transportation fate and without a capable traffic manager or adviser, neither knows whether his competitor is paying subnormal rates or whether he is paying inflated rates; nor whether, because of these revolutionary changes which our freight-rate structure is now undergoing, both he and his competitor will be paying different rates within a few months time.

Omitting the detail work which does not require unusual qualifications, the principal functions of a traffic department are the following:

1. Watching proposed changes in rates or anticipated changes due to decisions of the Interstate Commerce Commission, or the enactment of new or revised statutes.
2. Analyzing the rates and charges now being paid and negotiating for possible adjustments.
3. Surveying transportation methods, including packing and loading costs and highway, water, and rail rates and service.
4. Handling litigation before the Interstate Commerce Commission and state commissions or determining whether litigation is advisable.
5. Serving in an advisory capacity on matters of plant location, plant enlargements, sales and purchasing contracts.

Department Equipment. Regardless of the qualifications of its personnel, a traffic department cannot function efficiently without the necessary equip-

ment. It must have a complete, up-to-date library of federal and state transportation laws and the reports of the Interstate Commerce Commission as well as indices and digests thereof. It must maintain and keep up to date a complete file of freight rate schedules and must subscribe to such publications as will enable it to keep fully informed respecting our ever changing freight rate structure and transportation conditions. Since an important, if not the principal, function of the traffic manager is to keep himself fully informed, it is also deemed necessary to have memberships in various traffic organizations such as the National Industrial Traffic League and local or sectional cooperative traffic associations.

A traffic manager, just as a carpenter or a dentist, must have his working "tools." Without them expenditures for salaries and office space is very largely wasted.

Selecting a Traffic Manager. The proper functioning of a department depends almost entirely upon its manager. This is true in the case of a traffic department in a greater degree than would be in the case of other departments because not only is his work of a highly specialized nature but he alone knows whether or not the department is functioning efficiently. The greater part, or at least the more important part, of the traffic department's work is initiated and created by the traffic manager.

In a recent publication of the United States Department of Commerce entitled "Industrial Traffic Management—A Survey of its Relation to Business," the following statement is made:

The most important problem faced by an industry in connection with its traffic management has to do with the selection of the staff to be placed in charge. Great care is required in choosing a traffic manager. Few standards for measuring the relative efficiency of applicants are available today. Coupled with this is the fact that the executives who must do the selecting may have a limited idea of the nature of the work that is to be handled.

The Secretary of Commerce in his annual report for the fiscal year ended June 30, 1928, made the following statement in connection with industrial traffic management:

It is further evident that at the present time it is difficult for an executive to determine the fitness of an applicant for such work or to check the capability of the employee after engagement. It is therefore hoped that some system may be worked out whereby traffic clubs or similar organizations may hold public examinations in traffic management and issue certificates of fitness for various grades—as, for instance, director of traffic, senior traffic manager, junior traffic manager, traffic clerk, etc.

A few years, or even a great many years, experience in transportation work does not itself qualify a man as a traffic manager. Industrial traffic management embraces transportation in practically all of its phases, while many men, particularly those employed by the railroads, even though they have devoted many years to transportation work have never had an opportunity to get the necessary experience in the particular branch of traffic work which may be of the most importance to the industrial firm. Since it is often very difficult to find a man experienced in all phases of industrial traffic work, the employer should be careful to see that the man selected is experienced in

freight-rate construction, adjustment, and litigation. This is the one particular phase of traffic work in which experience and study is essential. The novice, regardless of his education and inherent intelligence, is helpless in work of this nature, although he may acquire very quickly a working knowledge of other departmental duties. A good rate man, not one who can merely quote rates, but one who understands the construction and adjustment of rates, must necessarily have a good knowledge of transportation work of all kinds because this is a prerequisite to such rate knowledge. Therefore, to have a good rate man, means that you have at the same time a well-rounded-out traffic manager.

Executives should beware of the traffic manager who appears to be particularly adept at getting last-minute sleeping-car accommodations and who delights in introducing them to high railroad officials. These are no criteria of a traffic manager's ability to do important things, but, on the other hand are usually an indication of his weakness, since they are resorted to as a substitute for initiative and for constructive, valuable work as a means for justifying his continued employment. The executive should not be deceived by unusual energy and interest displayed by the traffic manager when he handles something emanating from his superior executives. This is a most common symptom of weakness. One should remember also that the traffic manager should be the "watch dog" of the transportation situation, that he should initiate and create the work which makes him a well paid specialist and that the handling of the comparatively few matters given him by the executive is actually a small part of his work.

The importance of selecting as traffic manager a man of high character and unusual energy is apparent. He should be a man to whom the work is fascinating and who performs his important duties, not alone for his salary, but for the pleasure he finds in it. Unlike the heads of other departments, he has practically no check on his work and must be relied on both to know his job and to perform his duties in a thoroughly conscientious manner. An industrial executive should not rely entirely on his own impression of a man in selecting his traffic manager nor in appraising his work, but should seek the advice and recommendations of those who are in a position to know properly qualified men.

Outside Traffic Service. Small firms, which cannot afford to pay the salaries commanded by fully qualified traffic managers and to properly equip their offices, should have the services of a traffic consultant. This profession has developed rapidly in recent years and well-qualified, thoroughly reliable consultants are now found in most of the large cities. Most of those of the more dependable type have formed the Industrial Traffic Counselors' Association and membership in this organization as a general proposition gives assurance of reliability and efficiency.

Many of these consultants specialize in rendering a complete traffic service on a monthly retainer or salary basis. These consultants, or at least the more successful ones, have superior qualifications and must of necessity maintain complete equipment such as tariff files and library. Their service is generally more efficient and of greater value than that of a poorly equipped or inefficiently managed traffic department. Naturally, considering the

incidental expenses connected with the maintenance of a firm's own traffic department, the cost of such outside traffic service is comparatively low.

In some cases a consultant is employed on a retainer as an adjunct to the traffic department. This is done where the volume of detail work is so great that the constant attention of a man within the firm's organization is required, but the traffic manager is paid a nominal salary and is not given the necessary expensive equipment. This is practiced by several very large corporations and has been found satisfactory and economical.

Other large industrial firms are having their traffic organization and its work surveyed and reported on periodically by a traffic consultant. This does not necessarily imply a lack of confidence in the traffic manager, but gives assurance that advantage is being taken by every opportunity for savings or improvements in transportation costs and service.

BUSINESS LIBRARIES

BY FLORENCE A. GRANT, *Librarian, Standard Brands, Inc.*

Why Have a Library? The fact that there are today hundreds of libraries established in connection with industrial and commercial firms is evidence that their value is being recognized to an increasing degree.

Modern business calls to its aid every variety of expert and profession, the lawyer, the artist, the scientist, the physician, the teacher and now the librarian. The librarians themselves in the past decade have been gradually adapting their professional knowledge and developing specialists for the business field. New uses for the library in business are continually being discovered, so that it is no longer merely a convenient collection of books where the staff may go to look up the spelling of a word, a date, or the population of Hawaii. It is an active working tool serving every department of the business and every member of the personnel. To stress here only two important "whys," the library is a very effective *time-and labor-saving device*. A private secretary or department assistant need no longer spend hours, often in vain, in a search for some elusive piece of needed information. It will probably be in the library, or if not, the librarian will know where to get it quickly. This brings out the second point. The *librarian can tap many outside sources of information* of which the average business staff is not even aware. The cornerstone of a librarian's training is knowledge of sources of information.

Establishing a Library. There are seven steps to be considered in establishing a library in a business. These seven points can equally well be used as points of departure for a *survey of an existing library*.

1. Why have a library?
2. What kind is needed?
3. Who shall have charge of it? Where does it belong in the organization chart?
4. How shall a staff be selected and where can it be obtained?
5. Where shall the library be located and how equipped?
6. What can be expected of it?
7. How much will it cost?

Types of Libraries. Business libraries fall generally into four groups. In order of their usefulness and also, roughly, in order of their historical development, these are the repository, the research or departmental, the recreational, and the general service types.

The Repository Library. Fortunately, the pure repository type is fast being replaced or expanded into the second or fourth type. It usually began because somebody said, "I haven't room for all these books in my office. Why don't we collect everybody's books and start a library?" Or, sometimes it was started because a place was needed to keep a file of the company's own publications and relics of company history. In many such cases, the custodian chosen was not a trained librarian, therefore it did not grow and develop. Preservation and storage, while important, are far from being the vital functions of a library.

The Research or Departmental Library. The departmental library is established to serve a specific department and limited in scope to the needs of that department. Perhaps most often this is connected with the so-called research or statistical department, but many large firms have an accounting library, a legal library, a technical library, or all of these and several other varieties. When a departmental library has expanded beyond the limits of a small individual collection of books, usually a trained librarian is employed.

The Recreational Library. The recreational library is in one sense a departmental type for it is usually instigated by the welfare or personnel management department and operated by them. But because its point of view and scope is not directed at the subject matter of the business itself, it is classed separately here. Such a library may be purely recreational, including fiction and popular books and magazines, or it may aim to stimulate self-education and include textbooks, vocational guidance material, and opportunity for acquiring a basic knowledge of the business or industry in which the firm is engaged. It may serve only the home office or it may carry on extension work and give service to scattered branches of the company throughout the world.

The General Service Library. The most modern development for the business world of today combines all three of the others. This is the general library or a general library system covering the entire field of the firm's business, used by all departments and managed by a specially trained business librarian. Often several departmental libraries which have developed separately, can be combined in a central location, with a corresponding saving in space and staff, and, if carefully planned, with no actual loss in efficient service.

Sometimes the problem is one of coordinating without combining an already existing group of departmental libraries into a unified system under one control, just as most businesses of today have established central control over purchases, departmental files, and other work of a functional nature.

On the other hand, it is occasionally wise to break down a very large central library into several units in different locations, for the sake of convenience of access, and to obtain more intimate knowledge and attention on the part of the library staff to the needs of some individual departments. When this is done it is important to retain a unified control and a high degree of coordination and cooperation between the separate units. The advantages

are obvious and are the same in principle as apply to any problem of organization: centralized purchasing, reduction of number of higher-salaried positions on the staff, complete availability of entire resources to all departments, avoidance of wasteful duplication in material and records, and a unified system of management so that separate units can be set up as needed, or reabsorbed into the general collection with the minimum of disruption.

Place of Library in Organization. When libraries first came into the business world, their function was so little understood and perhaps so little valued that they were seldom fitted neatly into the company organization. More often than not the library was merely a sort of appendage to the department of the executive, no matter which one, who had been personally instrumental in starting it.

Today the library is as carefully placed and coordinated on the organization chart as any other department. With few exceptions the general library is found in one of three places: as a service department under the office manager, as a branch of the research department, or operating as a separate unit responsible directly to an executive officer.

The first plan is seldom satisfactory. The library is a service department, but it should hardly be classed with the mail or multigraph department, or other obvious sections of the office services. The efficiency of its service is not a matter of office mechanics, but of policy development and cooperation with and from every other department.

By far the largest proportion of general libraries will be found as units of research departments. This is entirely natural since the research workers entering the field of business were the first to demand library service, and the departmental library organized for their use remained under their jurisdiction even after it had expanded to serve the entire business. The only danger in this arrangement is that other departments will not make as full use of the service as they might because they regard the library as the private preserve of the research department, which sometimes has little active contact with other departments. But this is readily overcome by a hospitable attitude on the part of the research department head, by a librarian who watches for opportunities to widen the service, and by a little advertising of the library facilities.

The third arrangement, that of a library operating directly under an executive officer, is followed in some companies with great success, if the officer, usually a vice president, is interested and appreciates the possibilities. This places the library on a par with other expert services, the legal or accounting departments, or the research department itself. The great advantage of this plan is that it is the most likely to insure a rounded development correlated in every respect to the expansion of the business. This is the only practicable type of control where a system of several libraries operates under a central or head librarian. Here responsibility must head up to a point above all departments.

Selection of Library Staff. The first criterion is that this is an expert's job and can only be done by an expert. The librarian must be a trained person, not just anyone who knows and likes books. The second essential is actual experience in the business world.

Sometimes this almost seems the more important. This experience may have been in some kind of commercial, industrial or financial library, or it may have been experience in some other business position than librarian, such as secretary. In other words, the ideal business librarian has been trained as a general practitioner, then has practiced to become a specialist. The lack of this special business knowledge on the part of a librarian has sometimes unfortunately resulted in completely discrediting the library idea with the executives of a firm.

Library schools have of late years recognized this need for specialization and some of them, particularly the New York State Library School at Columbia University, have arranged special courses for those students intending to enter the business field.

The selection of the assistants should be left to the librarian. The positions of stenographer, typist, mail clerk and office boy found in large libraries can, however, be filled through the office manager or the established employment channel, or these positions can be filled by inexperienced library assistants and thus used as training ground.

In establishing a new library, assistance in finding a librarian may be obtained through the library schools, the library associations, the American Library Association and the Special Libraries Association, through employment agencies specializing in this field, and from the local public library, particularly if it operates a business branch, as more than a hundred cities now do.

Location and Equipment. The librarian on the spot is the best consultant on location and equipment. The important points to consider are quiet location for purposes of study, not next door to the bookkeeping machines, convenience of access for the departments using it most, and the largest amount of daylight available, with the best lighting equipment, for the work space. This is more important even than for executive offices, for the library staff are using their eyes continually for at least 80 per cent of the working day.

Some allowance for storage space quickly becomes essential. Much of the material which must be kept in the library does not need to be instantly accessible and can be more economically packed in a closet or storeroom without regard for appearances.

The furniture should be standard library equipment which is specialized for its own needs. Makeshifts do not pay. Open shelves, either steel or wood, are more practicable than closed cases for general purposes, in spite of the cost of keeping the books clean. Filing cabinets may be either steel or wood, but should have well-balanced drawers that handle easily when loaded. In most cases, unless space is at a great premium, legal size files are best. Much of the material to be filed will be larger than letter size, and folding doubles the bulk and is destructive of material. The choice of folders for the files is important. Heavy pressboard folders cost more and occupy more space, but stand up better under hard usage in a permanent file. Light folders have to be frequently replaced, adding to the labor cost.

Other special furniture will be needed—catalogue cabinets, dictionary stands, magazine and newspaper racks and covers, and reading tables. If there are

large charts, maps, or books to be kept, provision must be made for this in special cabinets, shelves, or map cases.

Typewriters may or may not be noiseless, but they must be specially adapted for writing cards. Even standard machines differ very much in this respect, and the library should be allowed to use any special attachments which may help. Certain special library forms and supplies will be needed which cannot be purchased through general stationers.

Work of the Library. The general business library has three major functions: the location of sources and collection of material and facts relating to every angle of the firm's business, the dissemination of this material when needed or when timely to departments interested, and the repository or preservation function.

The last is the simplest to perform. The chief difficulty here is the judicial elimination of obsolete material to keep within the space allotted. Here belongs the work of keeping a record of company history. It must be condensed into compact summary form, but should include usually a complete file of all advertising and other publications of the company. One point should be emphasized here. In a large firm the librarian can scarcely find time to collect this personally. All departments must be required to cooperate and be responsible for supplying facts and copies of publications promptly to the library. However, the library is not the place to store bulky records such as sales statistics, belonging definitely to a specific department.

The second function, *dissemination of material*, is often the point where the librarian has the best opportunity to exercise skill and ingenuity. The best of libraries is useless unless kept in circulation. This is accomplished in various ways:

1. Furnishing specific material on request.
2. Regular routing of periodicals and bulletins to departments interested.
3. Library bulletins, which may be typed, mimeographed, or even printed, and which will include announcements of new material, news items, and reviews or abstracts of important books or articles.
4. Current magazine and newspaper clipping service on requested subjects for individuals or departments.
5. Special services furnished regularly, such as current price lists, coming conventions, lists of ship sailings, etc.

But both material and method must be carefully adapted to the need to be served, if the library is to work efficiently, and a great deal of cooperation is needed from those using it. Persons must return material promptly and should at once stop special reports or items being sent them regularly when the need for them is over. One of the most frequent and exasperating causes of lost time in the library is the client who makes a dark secret of just what he does want. He asks for a specific book, which is sent him, only to find that he wants a ten-place logarithm table, while the book he asked for has a five-place table. If he had been definite in his request the first time, the librarian could have sent what was needed at once.

In most libraries the function absorbing the largest amount of staff time is the *collecting and preparation of material*. This includes ordering and cataloguing books; reading, clipping, indexing, and making abstracts from

newspapers and magazines; the perusal of many catalogues and check lists watching for new material; and the searching of outside sources such as other libraries. This necessarily consumes a tremendous amount of time, because an enormous amount of chaff must be sifted to get at the grain. This is especially true of current periodical material, which must be looked over at once while of current value. The alert librarian is constantly trying to reduce this, and find short cuts such as indexes and digests. The price of such aids often seems very high, but they soon pay for themselves.

The value of any collection depends on its availability, in other words, on the *indexing and analyzing done by the staff*. The small library is no exception. In fact, it is even more important when the material is limited to analyze it carefully in order to use it to the fullest degree.

In collecting material the librarian needs cooperation. Executives and department heads should take the library into their confidence as far ahead as possible. Most business librarians will agree that one of their major needs is establishing "listening posts" in the organization so they may be warned in time to prepare for special demands to be made upon them.

At this point attention might be called to a frequently neglected source of information for the library, the *company's correspondence*. By a little cooperation between the filing departments and the library, correspondence of certain specified types, or with enclosures of printed matter, can be routed to the library before filing. The librarian can glean from this and store away much material, advance information, facts not accessible from any other source, which would otherwise be buried or be lost when the correspondence was discarded as obsolete.

There are certain other routine tasks which may well be handled by the library. Book and magazine orders for departments and even for branch offices will receive expert handling here, and most purchasing departments are glad to be relieved of this work which requires some special knowledge. If the firm does not use an advertising agency, or has not a separate checking department, the records of advertising insertion can readily be kept in the library and invoices checked. In this case all checking copies should be addressed to the library and routed from there after checking to the advertising or other departments who may use them.

Two points on which a definite policy must early be decided upon by the person ultimately responsible for the library, are the question of *personal work for members of the company staff* and *work for outsiders*. The library is a service department and the staff should not be put in the position of refusing service on their own initiative. There must be a settled policy to fall back on, either full service, complete refusal, or a compromise, such as service up to a specified time requirement limit, or service when request is approved by the responsible executive.

The above paragraphs cover the main duties usually assigned to the business library. It is important to remember one thing that the librarian's job, by training and by job analysis, is primarily the *location and rating of sources*, and the *collection of facts*. The *true research function, involving also selection and interpretation of the facts, is another matter*. This calls for a greater subject knowledge or greater special knowledge of the firm's business or of

the departmental work than the librarian has opportunity to acquire. It also demands a different training and skill.

The two talents are seldom found in one librarian and both types of work should not be expected. If such work is to be assigned to the library, then a trained research worker must be put on the staff and helped to the necessary special knowledge. One evidence that these two are rare in one person is that when a librarian is discovered with a special aptitude for research, he is often drafted out of the library entirely and into the research department, where his knowledge of sources makes him invaluable.

Cost. Only a few general points will be brought out on costs because obviously it depends on the work to be done and how large a staff is required. The general scale of business library salaries is higher than in public libraries. This is partly because public service is generally low paid, but also because of the premium accruing to specialization. Statistics are difficult to get because business salaries are seldom published. The range for head librarian probably runs from \$2,000 to \$4,500, with an occasional position running much higher, even up to \$8,000. The average will be about \$3,000. Library trained assistants range from \$1,500 to \$3,000. The average for the senior rank such as cataloguers and reference workers, is about \$2,200. The miscellaneous positions would receive the local market rate for stenographer, etc. Salaries will always be the largest item of expense, running from 70 to 80 per cent of the total budget.

The other large item is the material content of the library, and here again only general points can be made. Some libraries will find book expense a much larger item than others. Scientific books and art books are examples of high-priced material; also, scientific books must be soon replaced by new editions or up-to-the-minute works. Some libraries will find their most valuable material in periodicals and trade papers, and this account will be very heavy. It is also heavy in technical libraries because scientific periodicals are many and costly. In this connection it is interesting to note that indexing costs for magazines have recently been worked out. It was found that the salary cost alone ran about \$60 a year for each monthly and about \$260 a year for each weekly.

The Budget. The cost of the library is not always viewed sensibly by executives. It is of course an indirect service whose output cannot be exactly measured or priced. For this reason it is liable to be either starved or spoiled, sometimes alternating between the two. Any business librarian will welcome the introduction of a budget as an evidence that the department will be considered by the management on the same scientific basis as other parts of the business. But the budget should take into consideration the year to come as well as past years, and the librarian must be taken into the confidence of the planning department, and not left wholly to steer the course by straws in the wind. If there is to be any expansion in the business during the year involving increase in general staff, probably a corresponding increase will be needed in the library. If there are to be new departures, new products introduced, provision must be made for extraordinary outlay to cover equipping the library with books and materials covering these subjects, just as the factory will have to be equipped with new tools and machines.

This would seem to be a very good point on which to finish. The library in business needs to be considered in the light of scientific management. It has through the pioneering qualities of its librarians been doing excellent work for many years for the business world. But too often it has not received the needed attention from management to realize its full possibilities. It has been tolerated and pointed to with pride; it has been considered a luxury which followed other luxuries into the discard in periods of economy; and it has been considered a thing apart and left strictly to its own devices.

But through better understanding of each other's jobs between the business man and the librarian, and longer experience in working together, the library is fast being integrated into its place as a valuable tool of business, to be studied, improved, utilized to a larger extent, and accounted for just as any other tool.

MANAGEMENT RESEARCH METHODS AND QUALIFICATIONS¹

BY W. J. DONALD, *Managing Director, American Management Association*

The Engineer in Industry. Twenty years' progress in management owes much to science. Scientific methods of finding the solution of management problems have brought light to many a dark corner or narrow and tortuous alley.

It is easy to understand how scientific method made its first large contributions to the field of production. There the engineer has been a power for decades. For a long time, to be sure, he functioned as an advisor, first largely as a consulting engineer, and later more and more as a full-time member of the staff of a company. Of recent years a rapidly increasing percentage of line executives in factories, railroads and public utilities have been drawn from the engineering profession.

It is popularly believed that electrical engineers are better trained than others for the electrical manufacturing business, for the operation of electrically operated railroads, and for the operation of power plants; that mechanical engineers are better trained for the operation of industries in which machinery plays a large part, and that similarly chemists and civil engineers are especially well equipped for certain classes of production in which their respective types of knowledge are particularly helpful.

While acknowledging the value of a grasp of particular fields of knowledge, many are thoroughly convinced that it is not so much a knowledge of mechanical, electrical, or civil engineering or chemistry which has brought this type of trained man—the engineer—into his own in the production side of industry. Engineers won their present place in corporate organization chiefly because they had acquired a technique of investigation which is essential to modern manufacturing and utility operation. The processes of analysis which are applicable in engineering or in chemistry are fundamentally alike for all. These processes are the discovery and verification of facts, scientific methods of analysis of facts, and the discovery and proving of relations of cause and

¹ Taken by permission from *Harvard Business Review*, pp. 149-156, January, 1927.

effect. The devising of solutions of problems thus analyzed, experimentation with devices to meet the situation under investigation, and the measurement of results of experiment are the closing chapters in the application of those scientific methods which sound engineering training provides.

Not every engineer, so called, has this equipment. It is possible for men to acquire engineering degrees who have no grasp of those research methods without which no education can be said to have provided a scientific equipment. Mere mechanical lore never made a man a scientist. Nor is knowledge of formulas sufficient. In college days many engineering students debate whether it is necessary to learn how a formula is derived or why it is true. Some think it sufficient figuratively to carry the formulas on their cuffs. How far such men get in the practical world depends, of course, on how often they meet recognizable problems for which their ready-made formulas will apply. What they do on meeting new problems would itself make an interesting topic for scientific investigation. Probably most of them sink to the level of skilled workmen or turn their energies into channels where a providence-provided personality makes up for lack of equipment in scientific method.

Scientific Method in Production. Industry today makes vast demands on the man equipped with scientific methods of approach to the solution of problems. There are more variables today in any production situation, and the solution of problems through the isolation of particular factors presents greater difficulty today than ever before. "Hunch" methods of appraising a situation are utterly inadequate for the needs of most companies. It takes more than "common sense" to determine whether the installation of certain conveying machinery combined with an incentive plan complicated by labor organization, may be desirable at present basic wage rates, affected as everything may be by apprentice training, the trend in labor legislation, immigration restriction, the possibilities of increasing foreign markets, the invention of new machinery, the trend in capital costs, and so on, and so on.

And there is more at stake—in dollars, reputations, and human welfare. Even if the largest companies made costly mistakes in the nineties or even later, their bankruptcy did not start even a good-sized ripple, let alone a financial panic or an industrial crisis; but let one of the larger automobile companies design a new model in which there is defect enough to prejudice the buying public and the sequel is a litter of damaged reputations, executive job hunters, uncomfortable visits to the bankers, stormy stockholders' meetings, labor out of work, a heavy turnover of salesmen and agents, and unfavorable budget comparisons for every company that supplies raw materials, parts or accessories, and probably a general disturbance in the price lists of the automotive world.

The purely technical engineering side of production has no longer a monopoly on the need for scientific methods of research. Probably it never did have, but now we know it has not. There is scarcely need to recount relations of cause and effect which bear on the whole situation. While there are companies which are satisfied to apply to labor symptoms a gloved hand where a mailed fist formerly reigned, there are others whose investigations get to the roots of problems and effect changes of policy and practice as regards benefit systems, pensions, wage plans and rates, and everything else affecting

the human factor in production. Some are willing to use selective tests which others in only partially similar situations have used with supposed success. Others devise their own tests for particular circumstances and test their validity against performance. Some companies adopt ready-made wage plans without analysis of their applicability and without measuring their effectiveness, and their executives are loud in their claims of achievement which they might or might not be able to prove. Not infrequently without analysis the same plan is applied to all workers, even though in dissimilar jobs, and to jobs in entirely different lines of industry. Some companies adopt ready-made instructional material for training apprentices without analysis of the job difficulties of the particular industry or company.

In other words, the need for scientific analysis arises from every corner of the whole production problem—management as well as engineering in the limited sense of that much abused term.

Hence it is that the man trained in scientific method has assumed a position of leadership in the whole production world. The really competent production executive today must have such a grasp of management research methods that he can carry on his own investigations, or at least can sufficiently interpret and appraise the soundness of recommendations of his associates.

Management as a Profession. Production management has thus become or at least is becoming a profession in which the man equipped with scientific methods of investigation—usually the engineer or chemist—is in the saddle.

While production has had the bulk of scientific attention, yet problems of marketing, office management, finance, and management organization are being subjected to similar scrutiny. In some quarters scientific methods have been applied to these fields for years or decades. In many quarters production received first attention, and the contagion has spread throughout the company or has been forced on divisions which were otherwise immune.

The engineer, the accountant, the actuary, and the economist are at work in every department of business and every phase of management. To put it in more generic terms, the techniques of the historian and the statistician which are the fundamentals of every scientific investigator have been put to work in the cause of better management. All of management, having thus risen somewhat out of the hunch stage, is thus becoming a profession.

What constitutes a profession? Henry S. Dennison, president of the Dennison Manufacturing Company, and Joseph H. Willits, Professor of Industry, University of Pennsylvania, have drawn up five criteria as follows:

1. A profession is an occupation which requires intellectual training as contrasted with mechanical skill.
2. A profession employs the fruits of science; uses the scientific method and maintains an experimental attitude toward information.
3. The professed knowledge is used by its applicant to the service of others, usually in a manner governed by a code of ethics.
4. The amount of financial return is not the chief measure of success.
5. The professions are given public and often legal recognition.

These criteria are of two types. The last three bear on the professional man's relations with others in the profession, to the client, and to the public.

The first two have to do with his equipment of scientific methods of investigation. Note that it would be hard to write into these criteria any idea that mere knowledge of facts is a part of professional equipment. Rather it is "the use of scientific method," and the "experimental attitude toward information" which are emphasized. Intellectual training consists of the attainment of these—not the mere acquisition of information.

Technique Rather Than Information. Valuable as information may be, its acquisition does not constitute scientific training or make a man a scientist.

This leads to the most important part of collegiate training in management. It has not been unusual for even some of our best known professors of management to emphasize subject matter to be covered and the sequence of courses—the main idea being the acquisition of knowledge about business management or information about management methods. Too often there is no evidence of an understanding of the true purpose of education—intellectual training in the sense of a technique of investigation.

The amount of information about management which college students will obtain in a two- three- or four-year course is relatively unimportant compared with what will be acquired in the first few years of business life. In any case its value is ephemeral, for the methods of management are developing and changing so rapidly that what is known today has become obsolete in a surprisingly short time. Furthermore, the text-book and collateral reading material used in class is too often already several years old. One need only recall the rapid development of budgeting methods or the radical change in attitude toward methods of employee training to illustrate this point.

What is of permanent value to the student is the acquisition of *technique of investigation as applied to management*—the impulse to verify facts, to challenge mere gossip and impressions, the power to use statistical method and to handle historical evidence.

This is the content which is common to the whole field of management—sales, production and finance—and it is from this type of training that management is going to realize its greatest development.

To these ends, the whole university curriculum may contribute. The classics can be defended not so much by the threadbare argument that one may thus acquire a knowledge of the roots of language and an appreciation of the literature of the centuries, as because they contribute to the technique of getting at the truth. The value of mathematics, modern languages, the physical and the social sciences, lies in the same direction. This is what we have sometimes called mental discipline.

Our collegiate schools of business are, of course, nearly all offering courses in statistical method. There is none that is giving specific instruction in the treatment of historical evidence—yet historical evidence is probably even more abused than statistics when applied in the management questions. The study of statistical method is fundamental for the future work of the investigator of management problems. But most of our colleges can go still further. Accounting can be taught universally, as it is being taught in some institutions, not as an equipment for keeping a set of books, but as a technique of management research. Everywhere through instruction in management there should be training through actual practice in the process of

investigation. It is a common complaint that some universities advance their staff members on the basis of the results of their researches. The policy has been criticized on the ground that the professor who is a good teacher is equally as valuable as the good investigator. Many sympathize with this point of view. As a matter of fact, the chief objective of education—intellectual training as we have defined it—cannot be achieved by men who lack the spirit and technique of the scientist, and no one can be a good teacher who cannot and is not demonstrating his ability to do research. Too often what is referred to as good teaching is nothing more than interesting lecturing, combined with a good technique for compelling students to acquire information which they spill out on schedule on the inevitable examination paper.

Probably professorial advancement could be placed on a middle ground by being given to those who, with the spirit of and capacity for research, at the same time are able to and do develop in their students the same spirit and capacity.

Now practice in scientific methods of management research is not to be acquired with entire satisfaction in an artificial or miniature world. It calls for a vast extension of cooperative business research. The faculty and the students must have real problems to investigate if the technique of investigation is to be imparted so successfully that it becomes the permanent equipment of the student. In this extension business executives have their part to play, and they have no real claim to a right to criticize until the way has been made reasonably smooth for our educational institutions.

There is already a vast literature on management, much of which has a great, even though temporary, value. It is growing by leaps and bounds, thanks to the activities of societies and the efforts of the publishers of journals and business books. Let us hope that the process may go on unabated. It serves to meet a pressing need. Executives meet to exchange experiences on management methods (not research methods) used to meet specific problems and share opinions regarding the merits of their methods. Let that, too, continue unabated. The inclination to investigate a company's problems must be preceded by an awareness that problems exist, and the knowledge that other companies use different methods is likely to stir executives into action.

So, too, there are histories and biographies unending, so much so that one almost has to make history in order to find a worthy topic for investigation. But of literature on the treatment of historical evidence and the verification and interpretation of evidence there is a dearth. Management suffers from the same lack.

Need for Scientific Study of Management. A beginning has, of course, been made. Management societies have published a few papers which merit inclusion in a list of documents on management research methods. Despite a comparative lack of appreciation, the publishers have also offered us a few books of similar importance.

There is a considerable number of books on statistical method which are useful to the investigator of management problems, but their value is considerably reduced by the fact that examples of the application of statistical method have little or no relation to management. And as for literature on

methods of treating historical evidence in the field of management—find it if you can.

It is easy to agree that there is ample room for a body of literature of scientific methods of investigating management problems.

What have we a right to expect of the future? There is set down below a few of the topics on which papers of merit would be welcomed by the business world. And for the sake of clarity, there is set off against each, topics which do not belong in the field of research methods. There is a clear line of distinction between management research, management methods, and management research methods. It is the development of the latter and the ever widening number of competent users which will contribute most to the cause of management either as a movement, a body of knowledge, or a profession. Without it there will be a dearth of sound management research and much less than we need of effective management methods.

These documents do not, of course, include numerous papers in which are presented management methods which have been adopted after scientific investigation or conclusions regarding results achieved which are based on careful scientific measurement and appraisal. Such papers are extremely valuable in suggesting lines of investigation for those whose problems have not been satisfactorily solved, but their value presumes that those to whom they open up a line of investigation are equipped to study the problem scientifically, and will not merely adopt a management method ready made without, in addition, ability to measure the results achieved. Unfortunately, this presumption has altogether too little validity.

Some possible topics are as follows:

1. The method of determining what incentive plan would best suit a particular class of employees; *not* the art of installing an incentive plan.
2. The method of measuring the results of the installation of an incentive plan; *not* experience with or the results from installing it.
3. The formula involved in determining what the financial liabilities under a pension will be; *not* the actual financial liabilities under a pension plan or the experience of various companies.
4. The method of determining the best method of posting; *not* the best way to post reports.
5. The method of determining and testing a test for selecting employees; *not* experience with tests for employees.
6. The formula for going about a classification and rating of executives; *not* experience with a plan for classifying and rating executives.
7. The technique of determining where to locate a plant; *not* conclusions as to where to locate a plant.
8. The technique of making a job analysis and of standardizing salaries and wages; *not* a classification of standard jobs and a salary or wage standardization plan.
9. The formulas for significant ratios; *not* actual operating or balance-sheet ratios.
10. The method of determining economical quantities; *not* the economical quantities for production.
11. The method of determining the instructional material needed; *not* the proper instructional material for a company's salesmen.

12. The technique of market analysis; *not* conclusions regarding markets for a commodity.

Other Criteria of a Profession. What can be said of the other three criteria? They have to do with the ethics of a profession. Frankly, the situation looks more than usually complicated, though probably not more so than the circumstances surrounding the birth of the medical, legal, or engineering profession. There are, of course, the relations of the consultant with the client, with his staff, with each other and toward the public—the consumer. Executives of companies who hold advisory positions have delicate problems of relations with outside consultants, with their own subordinates, with line executives high and low, and even their obligations to the public and to their own selves. Line executives who have the spirit of the scientist have their relations with other line executives, with advisors, with their superiors, and with their subordinates, including the workers.

What is the ethical content common to all of these? We find in them only three principles—namely:

1. Allegiance to scientifically determined truth.
2. Willingness to share the knowledge of scientific methods of investigation with others.
3. Willingness to reward with recognition competent users of scientific research methods and especially those who have contributed to the body of knowledge of management research methods.

Nothing else will develop allegiance to scientifically determined truth as will following the road down which it leads. It pays in satisfaction and in dollars. At least a considerable number of us will agree, without argument, that it does. One can lecture by the hour about the value of civic pride or civic cooperation, but none will be forthcoming until citizens get into action for the town. Moralizing about loyalty to truth will make no impression until it is practiced. Then it will need no argument or moralizing because it will have become a habit of mind.

There are still many companies which will not share their experience with others, especially competitors. By and large, they are taking a short-sighted view of matters. A competitor is never so dangerous as when he is incompetent, and especially when he does not know the facts of his company, his line of business, and business conditions generally. The company which accepts the salesman's alibis for not bringing in the orders—especially the statement that competitors are cutting prices when they are not—or which cut prices because it does not know through its trade association that it is getting its share of a depressed market, is a menace to the trade.

There is only one limitation to indiscriminate willingness to share experience with others. It lies in the danger that inadequately trained men will apply management methods to situations which they do not fit. Sharing experience with them is as likely to lead them astray as to help them. The remedy, however, lies not in secrecy but in the spread of an appreciation and knowledge of management research methods, with the aid of which a company's own problems may undergo thorough investigation along channels suggested by the experience of others. In the sharing of knowledge of the technique of management research there need be no reservations.

Indeed, this much at least is a professional obligation. In medicine, it has been a point of professional honor that all discoveries shall be shared; whoever exploits a discovery is considered a quack. Secrecy about management methods has gone out of style, and unwillingness to discuss methods with others is mostly due today to lack of confidence that the right thing has been done or to lack of time to prepare adequately a satisfactory presentation. Executives who are sure of their accomplishments are extraordinarily willing to talk about their achievements.

CHAPTER V

EXECUTIVE PERSONNEL PROBLEMS

THE DISCOVERY OF EXECUTIVE TALENT

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The scarcity of executive material is due in large measure to mismanagement. It belongs on the same low level of planning as entering the Christmas season without an adequate stock, meeting sowing time without seed or equipment, reaching old age without enough money to support oneself, commencing construction without materials, and starting an expansion program without arranging for the necessary capital.

When management prepares for executive vacancies with the same resourcefulness that it now uses in planning for production, purchasing, accounting, and financing, the supply of good executive material will exceed the demand.

Relatively Small Number Needed. The problem is not a serious one to solve. Grant, as we may conservatively do, that executive positions in an organization are one-tenth of the total force and that the executive turnover is 20 per cent and the employee turnover 100 per cent, only two persons to every one hundred persons employed each year are needed on the average to fill the vacancies. No employment officer of average capacity will have any difficulty in employing two or even four or five people per hundred who have possibilities for promotion. There is enough raw material entering every year into any organization, where intelligent selection methods and long time planning are used, to swamp the demand for executive positions.

The task of filling executive positions is so much the easier because not all executives need to be Henry Fords. In every organization the majority of executive positions, those of a minor sort, are relatively routine jobs whose mechanical aspects can be quickly mastered and whose personnel duties consist of keeping subordinates busy, happy, and efficient in the performance of simple routine duties. It is both impossible and fatal to fill these positions permanently with people of unusual ability. It is impossible because they will not stick; it is fatal because it destroys morale.

Vacancies in the major positions which demand more than these simple essentials of character and leadership are much fewer in number than two per hundred per year, perhaps one in five hundred. To fill these in an organization of 3,000, the employment office and other selecting agencies would have to provide six people net each year who would at the proper time in the future be ready for major positions.

Theoretically, this again is a simple task. The scarcity is not in the raw material. It can be secured. The weakness lies rather in what is done with the people after they are employed. Ordinarily, at the present time, these undiscovered future executives are put to work on assigned jobs and are told more or less efficiently how to perform the duties for which they have been employed. But there is no plan for spotting them or for giving them special attention when discovered. By a process of what is essentially hit and miss self-education, some of them may stand out as better than others to the extent that they will attract the attention of somebody and in due time be mentioned in connection with promotional vacancies.

The "Can't Keep a Good Man Down" Theory. This is the ordinary planless method of selecting and training executives which with a few improvements is typical of this era of American business life. We believe the foolish theory, variously stated, that cream rises to the top, that water finds its own level, and that you can't keep a good man down. It is true, of course, that cream does rise to the top and that water seeks its own level, but cream is cream and water is water. Neither cream nor water is human.

The statement that you can't keep a good man down is careless bunkum invented by men who have risen to the top to explain why they have risen. Thousands of good men have been kept down by adverse conditions who would have risen had conditions been different. The raw material was good, but the retarded executives were kept down by blind-alley jobs, by belonging to a poor company, by careless bosses who did not know how to develop them, by hard luck, or by the lack of some quality that was essential in one organization but not of equal value in another. There are many good men, as far as native endowment is concerned, who have never risen and reached the top. I venture to assert, after some years of observation, that in any organization which I know a different president would have selected different executives from among the same employees and have had executives which were equally good as those now in control. Accident and environment play too large a part in selection to leave any foundation for the theory that you can't keep a good man down.

This hit-and-miss method of discovering executive talent is so unsatisfactory that business is becoming vocal about it. The subject of poor executive material is a favorite topic of discussion whenever major executives foregather. Undoubtedly, the supply of well-trained executive material is running far behind the demand. It could not be otherwise when so little attention is paid to its selection and training. While American methods of production, distribution, and financing have reached a position of international prestige, executive training is still in the primitive state where medicine was fifty years or more ago. Little use is being made of the enormous advances in science, psychology, and the art of teaching. The same hit-or-miss methods which have always held still prevail.

Yet, while this is, I believe, an accurate description of the conditions in the majority of organizations, a handful of men have been struggling with the problem in their own particular organizations and have reached conclusions here and there which possess enough validity to be useful as suggestions. These it has been our good fortune to examine, some by personal contact, and

the remainder by extended correspondence with fifty progressive firms through the courtesy of the American Management Association.

In this paper we shall deal with the topic of the *discovery* of executive talent, and in a succeeding report we shall present programs for the *training* of junior executives. For purposes of clarity and for convenience in discussion, I shall present a program for the discovery of executive talent in the form of a series of recommendations, as follows:

Program for the Discovery of Executive Talent. 1. *The attitude of the president, vice-president, and managers of an organization must be entirely sympathetic to executive training*, and this sympathy must be exhibited not only in feeling and conversation but particularly in *active cooperation*. If the major personality in an organization is not completely interested, it is a waste of time to undertake the project. If, specifically, he fails ordinarily to handle his own people in a manner that is an example to his subordinates, any program will result in failure. Machines and systems of accounting may be bought to do mechanical work, but the training of people cannot be handled by the adoption of resolutions or the issuing of commands. Personality must touch personality beneficently. A father may hire tutors to rear his son, but if he himself does not take a hand in the education, the boy loses something. Materials may be bought with money; training comes through personal contacts. Nothing can be substituted for this. Major executives can be exhibiting outbursts of anger and by habitual bad handling of people completely destroy the efficiency of a peerless training system. If one were approached to install a program of executive training, the first persons to size up before accepting the assignment would be the president and his important executives. If they do not possess the desire to be good trainers of their own immediate subordinates, a wise man would refuse the assignment because he knows that he would fail.

2. *One executive trainer* should be appointed. He should be a *major* executive with responsibility for the selection and training of executives. This is necessary for two reasons. First, the planning involved in the filling of vacancies is so important that responsibility should be placed in the hands of a single competent person. Second, no person can handle the training of executives who does not have the prestige that comes with a position and salary that is considered important in the organization.

This responsibility is both direct and delegated. Some of the work he must do himself; most of it, however, he delegates to line executives and others and sees that it is done. For in the last analysis each executive is responsible for training in his departments; that is one of his functions. But wise management details to one person the responsibility of seeing that executives perform their training duties efficiently.

The executive trainer exhibits a number of specific qualities. He is a good judge of men; he is forceful in personality; he loves the job of developing people; he is sympathetic; and preferably he has had teaching experience.

Whether the executive should give his whole time to the problem depends upon the size of the organization. In an organization of 1,500 employees, he will be kept fully occupied. In a smaller organization other duties may appropriately be performed by this executive.

3. A general policy of *promotion from within the organization* should be adopted. To this recommendation there are two sides. Appointment from the outside is good when the new man brings new ideas, and it is necessary when an organization has gone to seed to such an extent that new ideas cannot be found within the organization. There is a danger that promotion from within may thus lead to inbreeding. Yet, in an active organization there are so many sources from which to gather new ideas that it is not necessary to employ executives from the outside merely to learn from them: consultants can be engaged, and executives can read, visit, and interview. Only in special cases is it necessary to bring in an outsider. This may be necessary in the employment of technical executives such as lawyers, doctors, engineers, and the like. In these technical positions, where only one expert is needed to supervise the work of untechnical clerks, it would be a waste of money to provide an understudy merely for the purpose of having somebody ready if and when the executive happens to leave. In other cases outside employment is necessary when the management is caught unprepared to meet a vacancy through accident or carelessness in not having provided key men who can fill the position.

But this is always at the expense of morale. The juniors in the organization who see foreigners selected with great frequency either grow disgruntled, lose ambition, or leave. No young man will give his best to an organization in which he is likely to be debarred from the prize positions that are always, or frequently, awarded to outsiders.

When, therefore, new executives are brought into an organization, care is taken (in all of the fifty organizations that cooperated with us in our investigation) to preserve morale by taking into confidence those within the organization who might consider themselves to be candidates for the position. Our firms tell us that management should be able to make a good case for such appointments by showing that the position requires unusual technical training, that the outsider has outstanding qualifications, or that the reasons for the action are exceptional.

Management should be completely sold to the idea of promotion from within to the point of being quite fussy about it. The opposite policy is like the hand of death on the initiative of employees and assistants. An organization that is committed to outside selection as a major policy can never have superior under executives. They will become mere job holders, not because they lack natural ability, but because ambition is killed.

4. A *personnel inventory of all executives* should be installed. This inventory includes the following three major items in addition to other minor or special items: (a) ability to produce results, such as, profits or output in the department; (b) ability to train his people, as well as to maintain their morale; (c) evidence of growth as shown in installing new ideas in his department and in suggesting new ideas both for his department or for the organization as a whole when he does not have control of installation. Evidence on these points should be secured from line executives superior to the executive being inventoried, and the judgment of as many such executives as possible should be secured.

The importance of records cannot be over stressed. No executive (or group of executives) is able to keep in his head either the names of all prospects or complete information about any one prospect. The comptroller keeps financial records because he must have exact information. The personnel officers must likewise keep personnel records if their information is to be equally exact.

5. *Annual inventory conferences* are held. At an appropriate time, and at least annually, the president calls for these judgments and holds conferences with his major executives to take stock of the executive personnel. At such conferences, the executives may be classified into four groups: (a) those whose work is satisfactory; (b) those who are not satisfactory but may improve with training and stimulation; (c) those ready for release, promotion, dismissal, transfer, or retirement; (d) those who as far as can be learned are likely to leave voluntarily.

From such a conference, which of necessity must be an extended meeting or series of meetings because of the importance and complexity of the subject, the executive trainer will be able to work out a program. He will know approximately the number and kind of positions to be shortly filled and will be prepared to bring to the attention of those concerned the prospects who may be considered in filling the positions. In an ideal situation, he will have someone on hand ready for each position. In a practical situation he will usually need time to get ready for the filling of vacancies.

Such a detailed forecast of just what the demand for executives will be in an organization is absolutely essential for the operation of any training program for executives. It is important because on the one hand the trainer needs to know approximately how many will be needed so that he will not be caught short. On the other hand, he must avoid the deadly pitfall of preparing more people than there are positions to fill.

6. As a result of formal conferences such as those mentioned in the fifth recommendation and of informal conferences with the president or other major executives, the executive trainer will formulate the *type of qualifications that make for success in his organization*. This is necessary because undoubtedly executive qualifications that are essential in one organization may be detrimental in another. To illustrate: In organization *A* the executive must be able to "stand the gaff" and fight back in family rows; but in organization *B* criticisms and reprimands are much less frequent or more subtle. In organization *A*, a sensitive man would be a ruined misfit, even though he had superior ability; while in organization *B* he might blossom into a powerful personality. Converse, the aggressive "scrapper" who would fit into the executive group in *A* might never be more than a crude outsider in *B*.

Organizations have personalities as distinct from each other as those of individuals, and the executive trainer must have a clear picture of the type to which he has to build. He must pick people who will fit. Not for him is the task of radically changing this type, unless a new management with different qualities has recently been installed. The executive trainer must not develop people who merely suit him personally; he must select individuals who fit into the organization family.

Not only does this hold for major executives, but the trainer must also have clearly in mind complementary personalities in lower positions. If a section manager is in need of an assistant, the selection of this person will depend upon how well he fits in with the manager, partly to be congenial to him and partly to supplement the points in which the manager is weak.

In brief, efficiency of selection demands a knowledge of the subtle personal qualities which will make for success in each organization and in each specific situation within the organization.

In general, however, there are five *basic qualities* which are essential in good executives in all positions. To me, the following are the major qualities:

- a. Forcefulness enough to put across ideas which we believe to be right and persistence enough to stay with an idea until it is used.
- b. Dependability in performing well those tasks for which we are responsible.
- c. Criticalness which enables us to see those things that are not right.
- d. Constructiveness in suggesting practical methods for improving the things we criticize.
- e. Kindliness of spirit as a background of all our contacts with people.

A good executive is critical of everything that is done, including his own actions and convictions; he is able in the end to accompany a criticism with a method of improvement; he has the personal force, clarity, convincingness, and "guts" to put his suggestions across; he can be counted upon to fulfill his responsibilities with care; and behind his actions, he thinks kindly of people and is quick to see the good in them, the more so because he must be critical of everything and everybody. These are the elements of growth. When the executive ceases to grow, he dies.

7. All the major executives are stimulated to make a hobby of *discovering undiscovered talent*. This is difficult because when the executive makes his rounds and comes into contact with his people there are problems on his mind. He is then chiefly concerned in locating trouble and placing responsibility for mistakes. Consequently, he is not in the mood on such occasions to look for bright people, nor to recognize them; he can hardly keep from feeling that they are all dull. Therefore, he may need reeducation if he is to become interested in recognizing in some of the delinquents those abilities which when properly trained may develop into good executive material. For, if someone does not discover those who, with all their faults, are still capable, the management cannot hope to supply the executive demand. Clearly, on the executive trainer rests the responsibility for this reeducation.

8. Machinery should be set up in the office of the executive trainer for assembling *data on all likely prospects*. Here, on individual forms will be found names, histories, production records, and records of opinions concerning every individual in the organization who is thought to have executive possibilities.

9. The process of selection should begin at the door of the employment office when the rank and file of employees are engaged. Increasing attention is being given in many organizations to recruits from colleges and professional

schools. Just why the college man is supposed to be better than other men, I do not know. I think that it is chiefly due to the fact that he sees more broadly because he has read more widely. There is the further fact that he has more confidence in himself because of his college education in comparison with the young man who has not gone to college and feels that he has missed something. Certainly in many of our companies the trend is strongly set toward recruiting college graduates, and this is clearly wise where technical information is an essential qualification for an executive position, as in engineering, for instance. Some organizations make yearly visits to schools in the spring of each year. Others make college contacts through former graduates now in their employ, and still others through personal acquaintance with professors. Much of this recruiting is done merely to fill positions where no immediate thought is given to the later filling of executive positions. In several organizations and particularly in the department stores, college men are secured avowedly for the purpose of filling executive positions after training and are put into classes where the period of apprenticeship is short-circuited from the usual period of several years to from six months to two years. What the results are on morale and how effective the plan will be is not yet clearly demonstrated. So far as I can learn, those organizations that have tried the plan still believe it to be efficient.

In selecting college men the personal interview draws to focus scholastic standing, the judgment of the institutional employment officer, and of instructors, and evidence of extracurricular activities such as athletics and fraternity affiliations. From all these sources data are collected as to the personality, mental ability, and reliability of the applicant.

Few of the organizations normally select employees by approaching those belonging to other organizations. It seems to be a clause in the unwritten code of business ethics that the employee who wishes to change must apply. Little use is made of commercial employment agencies, but selection from among friends and acquaintances of present employees is very common and is highly considered. To a greater extent in looking for promotional executive material, the friends and acquaintances of executives are considered. This is due to the fact that such individuals may have an initial personal interest and will be likely to fit in if they show executive ability. But in all the cases reported, these persons are treated as though without influence, and undoubtedly in efficient organizations this is a fact and not a gesture. For nothing is more fatal to an organization from the point of view either of morale or efficiency than for the desirable promotions to be secured by friends of the management who have not merited the advancement. Normally, therefore, in our companies, the future executives enter through the employment office, not as potential executive timber, but as workers in the ranks employed to perform the duties for which they are engaged.

10. In securing executive prospects within the organization *informal* quests for material by the executive trainer and informal reports by individual executives to the executive trainer are supplemented by a formal request made at stated intervals of all the executives who collectively know the rank and file of employees. This request asks for the *names of additional prospects who have recently attracted attention*. The employment officers usually

provide the largest number of names. Particularly useful in selective sifting are the names of those employees who interview the employment officers seeking for raises in salary, for transfers, or for advice about their prospects of advancement. In this group are frequently found people of superior ability who are genuinely interested in advancement and have reached a point where they are considering a change of employment. To these names provided by the employment officers are added, by line executives, names from their own department and from other departments with which they are in touch. Staff executives and the executive trainer supplement these nominations from other sources.

11. The executive trainer sifts these prospects by the application of a variety of methods as follows:

a. He uses *intelligence tests* as a matter of routine procedure. Selecting any one of a number of good general intelligence tests, he standardizes it for his organization by giving it to the present occupants of executive positions to discover the maximum and minimum, the median and quartile grades for each group. For instance, in a department store, he sets up the scores of the major executives as one group, the buyer as a second, the assistant buyers as a third, and so on. By this means he sees about how much general intelligence is needed to fill each of the positions as well as it is now being filled. In addition he is able to determine upper and lower critical scores. If he finds on a scale of 150 that assistant buyers seldom rank below 70 and seldom run above 120, he would not be justified in giving close attention to a prospect for a position who has a rating either above or below these two points. If below, the question is raised as to whether or not he would have the brightness to fill the position. If above, the question arises as to his being too bright to hold the position for a period long enough to make it worth while to promote him into it.

Obviously, the intelligence score is not a complete measure of probable success. Forcefulness, ambition, likeableness, and other qualities of personality are equally important factors. But other things being equal, bright persons are more successful than dull ones in major positions, and the executive trainer is better able to place his people if he has an index of their mental brightness and has standardized ratings for his organization.

b. He will have *performance records*. In every organization with which I am acquainted, there are a number of records in the files which merely need to be assembled, and to these are added other records which should be kept for the needs of the personnel inventory. A few of the items which can be assembled are: sales percentages (in selling organizations); production records, absences and tardiness; service shopping reports (in department stores); and errors. Not infrequently, a study of these records will reveal unusual persons who have not been reported to the executive trainer by other executives.

c. *Reports from superiors* will be assembled. These take two forms: letter reports and rating scales. When a letter report is used the executive addressed is asked to give in his own words his impression of the strength and weakness of the prospect. When the rating scale is used the points upon which the executive is asked to express his judgment are listed, and he is directed to give a rating in symbols: a numerical rating on a scale of 1 to 10

or a grade by letters as A, B, C, D, E, or grades by points on a horizontal line in the graphic rating scale. When numerical ratings are used some organizations weigh each item and total the score of each individual on a scale of 1 to 100.

Some form of rating scale is used widely by our organizations. The scale has the advantage of compactness and inclusiveness of those items which are considered to be essential. It has, however, two disadvantages. In the first place, because the raters do not use the same basis for judgment, there are wide differences in the judgments upon the same individual. In the second place, it is difficult from the study of scales to get a clear picture of the individual rated. I have a personal preference for the letter type because the rater is left free to hit off the characteristics of the individual in his own words, and often these words are more revealing than the checks or symbols on a rating scale. After I examine a scale I always feel an urge to ask the rater to tell me what he really thinks of the individual. But this may be a personal idiosyncrasy.

When the letter type is used, the opinions should be written on a prepared form for ease in filing and handling, and preferably, the rater should be asked to give his opinion upon certain essential points which are listed in the request form. However, as has been said, he should express his opinion in his own words.

I am strongly inclined to believe that totaling numerical scores in rating scales is statistically inaccurate in view of the fact that the ratings on each point of the scale are so highly subjective. In either case, however, opinions should be collected from all who have acquaintance with the individual.

d. Organizations which give prizes for suggestions for improvement of procedure as in the form of the suggestion box utilize the returns from individuals to spot those who have ideas. They feel with justice that those who are sensitive to problems and resourceful in suggesting improvement possess two basic executive qualities.

e. When employees take courses in formal classes those students who rank high in scholarship or show forcefulness in class discussion are good subjects for further investigation.

f. The executive trainer should within his geographical limits make it a routine procedure each day for one-half hour at least to circulate among the employees in a friendly, personal way to learn their names, talk about interesting matters, make and maintain contacts, and particularly to search for finds.

12. With all these records before him the executive trainer is prepared to begin the *sifting process*. From the employment files he secures personal history records and such others as are at hand. Then he proceeds to the *personal interview*, the crux of the process of selection. He must in this interview decide whether or not the person is not suitable for consideration, clearly suitable, or worthy of further investigation.

One obvious pitfall to be avoided by the executive trainer is the danger to a prospect of raising his expectations by an unusual interview with a major executive. But a resourceful executive trainer will use a number of devices. He will sometimes conduct the interview casually on the floor when he is mak-

ing his rounds. He may call the prospect to the office for some other obvious reason and naturally fall into conversation with him about things in general. He may have so many young people coming to see him that a call is not an unusual occurrence, or he may invite the employees to come to him about any of their problems.

In preparation for the interview, the executive trainer prepares a list of items. He will secure information on each item. He will realize, of course, that there are some data that cannot be secured in an interview. Specifically, he cannot tell how dependable, honest, persistent, or loyal the person being interviewed is. On the other hand, there are a number of items on which he can form opinions in the interview. These include such as the following: the appearance and manners of the prospect; his likeableness; his attitude toward the organization's kind of work; his outside interests and hobbies; his forcefulness; his mental brightness in conversation; together with any disagreeable mannerisms that may prove to be handicaps. Preferably, a form should be prepared upon which to record the impressions of the interview. Again, I am of the opinion that an informal wording of the interview findings is preferable to the scale form.

In conducting the interview there are five simple suggestions which help to make the interview productive. These may be hit off with five verbs: *relax*, *listen*, *question*, *decide*, and *quit*. A good executive trainer always tries to place the interviewee at his ease, as soon as he enters the office. Relaxation is essential to psychological probing. The executive will be offhand, free, and as humorous as he is able to be. Similarly, the executive must be a good listener if he wishes to learn as much as he can within a given time. Sometimes it is much more difficult to listen than to talk. The executive has his stipulated items in mind and will ask the questions necessary to cover those items, but he will do little talking except in the form of questions. He will do no more talking outside the asking of questions than is necessary to get the interviewee to open up. As the interview continues the executive makes up his mind about the items upon which he is seeking information and jots them down, at least mentally. When the interview is complete he has the ability to indicate tactfully that it is over.

The worst possible interview that can be held is one which breaks all these rules. In such an interview the executive is so tense, high strung, or busy that the interviewee is embarrassed. The executive does all the talking but asks very few questions. When the interview is over he is not able to sum it up in his own way, and after the interview is really over the conversation drags on until the interviewee feels that he cannot spend any more time on it.

13. If the executive trainers' decision is favorable after he has collected and weighed all the available data, the individual is entered upon a prospect list for training and for further study. The first hurdle has thus been jumped by the prospect, but before he is transferred from the prospect list to the available list it is obviously necessary that some time be spent in extended preparation and training during which he will need to be given comprehensive tests of a practical sort upon all those items which are necessary for executive success.

THE DEVELOPMENT OF EXECUTIVE TALENT

BY W. W. CHARTERS, *Director, Bureau of Educational Research, College of Education, Ohio State University*

Training Is a Major Function of Management. In the past, but decreasingly in the present, the position was taken that management was not concerned with training. The manager of a department, under those conditions, was selected because of his knowledge of technical processes and because of his ability in getting work done. The most highly praised executive was the one who used the method of assigning tasks to a subordinate and leaving him largely alone to work out his own salvation. This was done for the stated reason that such a process developed the initiative and self-reliance of the young man.

This method of assigning duties without guidance is slowly becoming obsolete. Its decrease in popularity is due largely to the fact that the mistakes which are made when no guidance is given have become so serious that they are reflected in the prices charged to the customer and in the profits accruing to the shareholders. No organization, except an extremely wealthy or an extremely selfish one which has no regard for the welfare of the consuming public, can afford to follow the policy of making assignments to young executives without direction. Keen competition, which demands the lowest possible costs of production, is dealing this method a death blow.

The policy of assigning duties without direction is wisely applied only when we deal with able executives. Clearly, every corporation ought to have within its organization a number of executives who are so expert that departments and projects can be assigned to them with the expectation that the work will be well done because these executives know more about handling the problems than do their superiors or the board of directors. But even boards of directors and major executives closely study results and evaluate the results of such men—for Homer may nod, and the superior executive may make mistakes. In fact, as business becomes more complicated the intelligent executive constantly seeks for advice in all directions.

The principle that training is a major function of management is growing in acceptance. The statement that training is the only function of management is too extreme, because obviously policies have to be set up and decisions have to be made before work can be delegated through training. Yet executives are realizing that they can delegate economically only as they train with thoroughness. As has just been said, the overhead cannot stand the expense of delegation without training. On the contrary, that executive who has a well-trained force secures the leisure and the absence of strain that enables him to attend to those major problems of policy, which constitute his most important function. A little time spent on training while assigning duties relieves the executive of the nagging worries that arise from uncompleted details. A good trainer works as efficiently as an automobile works when it is hitting on all six cylinders and running on the level.

Books and classroom instruction are useful in learning backgrounds in training, but techniques of management are learned best on the job. When

a trainer wishes his boys to get the principles of business he may send them to books; but when he wishes to teach them how to handle specific problems within the organization he puts them to work. It is obvious that the author of a book on management must deal with general principles because the appeal of his material is wide. Moreover, the author will want to deal with generalization because one of the functions of a book is to present principles and generalizations which can be applied intelligently to many different types of situations. The book which deals only with a detailed method of handling specific situations has its place as a manual, but its scope is confined to the organization whose details it describes.

The responsibility of teaching management techniques, therefore, belongs to the line executive. He, and he alone, is able to provide the information that is necessary for the polished art of management. If he fails to recognize this principle and to put it into performance the subordinate is left to his own devices. He must learn the techniques of management by the wasteful trial and error method, which is being abandoned by progressive managers.

This principle results, in its application, in a system of decentralized training. The office of every executive is a little schoolroom in which one or more students are being taught. Centralized training has been advocated by many as the superior method of training. The conviction is based on the fact that in centralized training you can secure people who know the techniques of training; but its weakness as a system lies in the regrettable fact that these people who know the techniques of training neither know the techniques of management nor have the authority which carries conviction. In choosing between line executives who are not conspicuous trainers and excellent teachers who do not know the techniques of management, the choice lies increasingly with the selection of the line executive.

In this case, when training is decentralized and put into the hands of managers who are not expert in training, the function of the training department is increased. One of the functions of the training department becomes that of helping the manager improve his techniques of training. The training department provides materials, suggests ideas, frequently gives instruction in training to managers, still more frequently watches them at work and trains them on the job, and checks up for the major executives on the efficiency of the training which the manager gives to his subordinates.

Types of Executive Development. The most common method of choosing executives to be trained is to watch young men on the job for which they are employed and select those who seem to possess the qualities which will be useful in management. The most common method of developing these men is to let them continue on the production job, give them at first a few managerial responsibilities and later, as time goes on, increasing responsibility as they prove their capacity to handle the new duties assigned to them. In this way, at a slower or more rapid rate, depending on the individual, he grows into a more and more important executive. Ordinarily this junior is expected to take the problems assigned to him and work them out to the best of his ability. Some executives give him a good deal of assistance; others give him less. The amount and kind of training are unplanned and dependent on the individual preferences and abilities of the manager. Such training is usually

unorganized and depends upon chance so far as the organization as a whole is concerned. In other words, some of the juniors receive broad training from the manager and some receive none.

To make this training more efficient by calling attention to what the manager may do with intention and through planning, in addition to what he already does by accident, is one of the major functions of this report. For we believe that this method of training while the junior is producing is extremely valuable and neither can be nor should be eliminated in many organizations. We are convinced the possibilities of training that can be given in this type of situation have not been fully realized by the average manager who is confronted with this responsibility.

A second method of development is used in a number of organizations that require a larger number of executives than can be secured by the production method of training, which has just been described. In some companies the raw material which comes in through the employment office is frequently of a quality so low that the number of prospects is too few to fill the executive vacancies that occur. It sometimes happens, for instance, that when lower positions require little more than an eighth grade training, it will take a long time and may be impossible for the beginners on production jobs to develop the background and skill necessary for filling executive positions.

In such cases many organizations have made a short cut of the process. They have either taken young men out of production or have brought in from the schools and colleges young men who seem to possess managerial qualities, and have placed them in groups called the "flying squadron," "floaters," "students," and so on. Such a procedure has to be handled with great care because of the danger of training thereby a group of executives who have only a superficial knowledge of the business. This is cared for by a long continued process of routing young men through the different departments in order to secure the necessary technical background; by giving instruction in classes in order that the prospects may secure the proper functional background; and by providing them with other methods for securing a good personnel background.

We may contrast the two types mentioned by saying that *in the first type production is major and training is minor; while in the second type training is major and production is minor in importance.* As to which of these types is the better no one can decide. The first type works better in some organizations while the second works better in others. As to which type is best for a specific company must be left to the judgment of the company in question. As a general rule, however, we may say that if the production type is used then training must be safeguarded. If the training type of development is used, production must be adequately cared for to the point where the junior will have a knowledge of production methods adequate for managerial judgments.

To one who has followed the discussion closely it becomes apparent that whichever method is used a knowledge of the techniques of training is essential. A manager who has charge of young men under him is benefited by all the suggestions about training that he can get and, obviously, the companies that take the junior off production must likewise be aware of and utilize the

best methods of training. Our problem is how to improve training whichever method is used.

Managerial Background. The discussion of this complicated question will be clarified if we distinguish between two elements in executive training, namely, the acquisition of background and the learning of the techniques of management. It is a matter of common knowledge that an executive with a broad background is, other things being equal, more effective than one who has a limited background. Indeed, the acquisition of background is the chief argument in favor of a college education as a preparation for business.

Managerial background may be of three types. There is, first, what we may call the *functional background*. By that term we mean a background which is made up of the underlying principles and functions of business, a knowledge of the products of the company, and the place of the organization in the world of business. An executive with this functional background knows also the function of each of the divisions within the organization and apprehends the processes of marketing, production, distribution, and organization as they apply to his establishment.

In addition to this functional background there is in many institutions a need for a *technical background*. By this we mean a familiarity with those processes which are carried on within the organization to produce whatever product it is the business of the company to manufacture. For instance, in the production of steel it is recognized by those who know that a young man, even though he has an engineering education, needs to know how the product is manufactured through all its steps and processes in order to become a wise executive. Consequently, we find in organizations that use highly specialized technical processes that the common procedure is to route the prospective executive through all important divisions at a leisurely pace, so that he may in truth, as well as in appearances, master the essentials of the technique and thereby acquire this necessary technical background. This applies with equal force to the juniors who have been picked out of some one branch of the organization as to those who are brought in from the outside to take special training.

In other organizations, however, it frequently happens that a detailed technical knowledge is not of as great importance as has been indicated. Then the period of routing is shortened. Although it is dangerous to make this routing too short, it is not always necessary to route the junior through all the departments of the organization. For instance, if the executive to be trained is a foreman, his knowledge of other departments may be gained through talks and lectures and study, and his routing may be confined entirely to those departments through which the flow of production progresses. He is benefited by being routed through the superintendent's office, through the supply department, through the records department, and through the department which receives his material when he is finished with it, for the purpose of understanding clearly what his immediate contacts are within the organization. Again, a junior in the financial department will be routed through the divisions within that department, but he probably does not need to get into personal contact with the sales department. On the other hand, the junior in the sales department may very well be routed through the production depart-

ment at a rate sufficiently rapid to enable him to see the relation of production processes to sales product. The principle to be followed is this: Once the amount of technical background needed by an executive has been determined, he should be given those contacts within the organization which are necessary for him to acquire the information and understanding that he needs.

The third element in executive background is not stressed so greatly by our correspondents, but we know from our contacts with business that it is considered to be of primary importance. This we may call the *personnel background*. By the term we mean a knowledge of people and an appreciation of their motives, their intentions, and their ambitions. This type of background cannot be completely learned from books, although up to a certain point books are extremely useful. Much of it is learned, if learned at all, in the rough and tumble contacts of juniors with people, and it increases with age if the individual is sensitive to the feelings and actions of other men. Some people naturally possess this ability or seem to acquire it with little effort; others are extremely slow in developing understanding. But in either case understanding can be deepened by training.

Techniques of Management. The polished executive must, in addition to background, possess skill in the techniques of management. The techniques may be studied from three angles. The junior may secure information about the techniques by finding out what the problems of management are and learning how they are solved. Such an individual would be called a well-informed person. If he is well-informed he is usually of the bright, scholarly type who gathers information because of intellectual curiosity and retains it because of a good memory. But information about techniques does not guarantee skill in management. A good manager must not only know good techniques, but he must be able to put them into effect. In other words, we may approach the techniques of management from the angle of action. A course of training is successful to the degree that the manager knows what is to be done and actually puts his assignments across, whether they are assignments which depend on himself alone or on his ability to get other people to perform assigned duties for him. To turn information into action it is necessary to give the junior responsibility, and the training involved is concerned with methods of putting things across.

It is important also to approach the techniques of management from the point of view of the qualities which a good manager must possess. Frequently when a junior's performance is not good it can be improved by the correction of a trait of personality. A junior may be a good manager except for the fact that he is not courteous; or he may be lacking in self-confidence; or again in personal appearance. He may be very intelligent, possess a wide range of information and, on the whole, be an able executive; yet he may lack one or two more or less important qualities. In such a case training may greatly improve the performance of a junior by working directly upon those qualities of management in which he is deficient. Parenthetically, it may be said that if the qualities in which he is deficient are extremely essential to successful management, the failure to possess them may eliminate him as a prospect for advancement. Just what qualities yield to development and what do not is not at present scientifically known. Consequently the lack of

qualities as a deterrent to promotion must necessarily be left to the judgment of those concerned with promotion and with further training.

Techniques of Training. To organize the many methods which are used in training executives I have put the material into graphic form in the accompanying chart entitled "The Techniques of Training."

In the chart it will be noted that we have along the left-hand side techniques entitled school, outside courses, company courses, and so forth. The six columns to the right are divided into two groups of three each, one entitled "background," the other "techniques of management." The three columns under background refer to functional background, technical background, and personnel background. The three columns under techniques of management mean information, action, and qualities. The checks mean that schooling, for instance, will provide functional, technical and personnel background, but will not provide the techniques of management. Reading farther down the left-hand column we note by the checks in the column that routing, when properly conducted, can give training in all phases of the project. We shall now proceed to a discussion of the techniques of training.

Preliminary Schooling. It is obvious that the school which the junior attends before he makes contacts with an organization may be of value in

THE TECHNIQUES OF TRAINING

Techniques	Background			Techniques of management		
	Functional	Technical	Personnel	Information	Action	Qualities
Schooling.....	✓	✓	✓			
Library.....	✓	✓	✓			
Outside courses.....	✓	✓	✓			
Company courses.....	✓	✓	✓	✓		
Lectures.....	✓	✓	✓	✓		
Junior organizations.....	✓	✓	✓	✓		
Executive conferences....	✓	✓	✓	✓		
Conversations with managers.....	✓	✓	✓	✓		
Routing.....	✓	✓	✓	✓	✓	✓
Absorbing ideas.....	✓	✓	✓	✓		
Assigning managerial duties.....	✓	✓	✓	✓	✓	
Assigning problems.....	✓	✓	✓	✓	✓	
Correcting and disciplining.....	✓	✓	✓
Giving responsibility.....	✓	✓	✓
Trait development.....	✓

developing background. If he has been a student in a college of commerce he secures a functional background through a study of the principles of production and distribution, and to a certain extent he may secure information which will develop a technical background. In colleges of engineering he develops a technical background and perhaps to a smaller extent a functional background. Increasingly in both types of school he acquires a personnel background, although only recently has much attention been put to problems of personnel in professional schools. In colleges of liberal arts a background is developed of a much more general sort than is the case with professional schools that prepare for business.

Chiefly because of this background value do we find companies favoring graduates of professional schools. It is realized, however, that because of two facts all positions do not need to be filled by college graduates. In the first place, some minor executive positions require little background for reasonable efficiency in carrying on the work; in the second place, there are many bright young men who in the absence of an opportunity to attend college have acquired the fundamental principles of their jobs within the business itself. Because of their superior intelligence, thoughtfulness and curiosity, they have been able to gain a knowledge of business and of life sufficient for practical purposes.

The Company Library. Whether the prospect has attended college or not many organizations maintain generous library facilities, sometimes to provide technical and functional information, frequently to furnish ideas about the principles of psychology which underly methods of handling men. Some of our correspondents presented us with lists of titles obviously selected with great care and with the purpose of providing both techniques and principles.

The important point about the library, they feel, is that it should be well chosen. In some cases carefully prepared courses of reading have been worked out with guides to indicate what to look for and with directions about how to study properly. In a large number of organizations trained librarians are in charge. In some of these organizations the librarians are extremely expert reference workers, who in addition to handing out books to applicants select books on topics and even gather original data from many sources. In view of the demonstrated usefulness of a library in an organization the problem of expanding the function of the library and securing the expert service of a librarian is one that deserves much more careful attention than it has had by many organizations up to the present time, and in this service the junior executive may share.

Where organizations do not maintain libraries of their own they occasionally have close relationships with the reference department of a public library. This unselfish institution is willing to go to great lengths in providing printed material which will be of value to an organization, and frequently arrangements can be made to have a private branch of the library installed in the company plant.

Outside Courses. Business background is provided in many cases by formal courses of instruction. Sometimes these courses are prepared and conducted by outside organizations such as the Y. M. C. A. night schools, correspondence

schools, and the like. In such cases it is a common practice for the company to pay tuition charges or half the tuition charges when the student has successfully completed a course. In a few cases it is felt by the management that the student should bear this expense himself on the ground that he is personally deriving the benefit. Such managers also believe this is one method of weeding out those who lack ambition by reason of the fact, that if a man does not care enough to take a course and pay for it himself he does not possess the amount of initiative necessary to be a good executive. It appears to us, however, that the better plan is the one by which the company refunds the tuition when the course has been successfully completed. One such company, during the year 1927, refunded over \$5,000 to its employees in payment for tuition in outside courses satisfactorily completed.

Company Courses. A large number of companies carry on courses for juniors within their own organizations. Sometimes these are given on employee time, more frequently on company time. The argument in favor of devoting company time to them is based on the recognition of the benefit the organization derives from having the junior take additional training.

The advantage of company in contrast to outside courses lies in the greater control which the company possesses over its own courses. Clearly, when a course is given on the outside it is ordinarily given as a background course, but it does not deal with the specific practice of the individual company in which the prospect is employed. A company course, on the other hand, can teach the principles and at the same time give specific applications of these principles to the everyday problems which the prospect meets. Company courses, therefore, seem to be preferred since they combine both background and techniques. They are, however, more costly, because the salaries of members of the educational department in preparing and giving the courses are usually greater than the total amount of tuition charges by outside courses. Nevertheless, the difference in cost is more than compensated for by the increase in the practical nature of the course for the employees of the organization. It may therefore be said that, on the whole, the officials in our corresponding companies are fully aware of the advantage to themselves and to their employees of creating educational opportunities such as these just described.

As is naturally to be expected the variety of courses is very great. One organization conducts a series of sixteen courses most of which are intended for executives. Other organizations have one basic course through which all juniors above a certain level are put. These courses meet once a week, once a fortnight, or more frequently. Under the best conditions, the students are given outside reading assignments, are subjected to written and oral quizzes, and are put through the same kind of intensive training as is given in professional schools.

We have in our possession outlines of these courses presented in great detail in mimeographed form and frequently in printed form, combined with information about who are eligible, what it is necessary to do in order to enter, and other like matters. Organizations demonstrate by their attention to the matter that they consider training to be one of the major functions of an organization.

It is quite natural that a good many organizations which route students through departments as part of the training program should use classroom courses as supplementary to that procedure. Consequently, we find many of our companies requiring their juniors in training to work in departments part of the day and attend systematic courses during the remainder or in the evenings. This combination is undoubtedly extremely valuable if and when the background work in the course is correlated with the practical work in the departments. A combination such as this is not difficult to provide if the executive trainer lays out the problems worked upon in the departments and the principles developed in the classes, so that they more or less approximately synchronize.

While we are on the subject of courses it is best to clear the discussion of two major problems relating to the training of men for executive positions.

Number of Men to Train. In setting up a program the executive trainer must determine the number of men to be trained each year. This becomes a crucial question because of the fact that when more people are trained than can be quickly used, the morale of those who have received the training is lowered. Wise administrative officers, therefore, recognize that unless there is wide expansion of the business there is need for only a comparatively small number of people in training. Whether the number is large or small, the trend of executive replacement in the organization must be studied so that just enough people are trained to care for the vacancies.

When, however, more people are trained than are needed the problem is handled in two ways. In some cases the men are placed on special assignments, attached to the research department or even, in some organizations, told that they are free to accept positions elsewhere. The more satisfactory method, however, is for management to make no promises. In such a case it says, in effect, to bright young men, "Here is an opportunity for improvement which you will be glad to accept without any promises or hope on our part that we can promote you. It may be years before an opening occurs. You will have to prove yourself; but in the meantime you will be better prepared for business in this company or elsewhere." By judicious care the hopes of young men who take special training need not be unduly aroused.

Cost of Training. The cost of training executives is of interest, yet we secured very little information on the question. Where the prospect is developed by the production method the training he picks up for himself costs the company nothing. Where he is taken off a production job the cost of training is as much, or nearly as much, as the prospect would be likely to earn on a production job of a minor sort. The method of determining the cost is to multiply the salary per month by the number of months in training and add such overhead as is necessary to carry out the program. Some of our companies estimate the cost at from \$1,000 to \$2,000 for a six-months' course. Another spends \$1,000 for a four-months' course. In this case the company operates a formal training school with a full-time instructor, and in addition makes individual allowances to men who might be separated from their homes while in training.

Several observers, however, make an important point. To offset the cost of training, the prospect produces certain intangible yet important results.

When he is keen and alert he is frequently, if not usually, the source of many good suggestions, the financial value of which is not easily estimated but the general results of which are, nevertheless, perfectly evident to the management. The general impression of our group is that the cost is not great in proportion to the returns received from the training.

This is particularly true when we consider that on the whole the percentage of men who remain with their organizations is unexpectedly large. Roughly speaking, about 71 per cent of the men trained for executive positions remain with their companies for a period of three years or more after training, and there are few losses during the training period. In two companies, however, it is noted that more than one-half of the men do not remain long enough to become of any real value. Yet this proportion is exceptional and is due to the fact that in both cases the training received fits the men for more attractive lines of work.

Lectures. We can now continue the discussion of the methods by which men are trained. In most companies, whether systematic courses are given or not, lectures are provided from a variety of sources. Speakers, with or without national reputations, but with some expert knowledge are brought in from the outside. Heads of departments, chief executives, and experts within the departments are likewise drafted and used. Frequently these lectures are run in a series at the rate of one every two weeks or one a month. Sometimes they center around one topic; sometimes they are selected to cover a wide range of topics.

It is apparent, of course, that results accruing from isolated lectures cannot be compared with those in which the lectures are organized into compact courses. The reason for this is that when a man takes a course he expects to work, but when he attends a lecture he expects to do little more than listen. Consequently most of what the lecturer says evaporates. But in a course the lecture is supplemented by the required readings of the notes taken on the lecture and by discussions, or even by quizzing on what has been heard and read. The student, therefore, is compelled to work and when he works, learning conditions which prevail in professional schools are more nearly approximated, with the result that the training secured by the student is thereby tripled or quadrupled. In this, as in all learning, one learns only as he puts thought and effort into study and the isolated lecture fails because it does not demand effort.

In one company the organized lecture course has been developed with a high degree of efficiency. Over 200 executives and prospects are enrolled in the course which is two years in length and consists of approximately fifty topics. These are given to the men on company time. One lecture is given to the whole group on one day of a week. The subject matter of the lecture is prepared with very great care, mimeographed, and handed out to the members at the end of the lecture. During the following week the group is divided into about ten smaller groups, each containing twenty-five members. These, during the interval, have read and digested the lecture and at the second meeting they discuss the material that is contained in it. In this way each of the fifty topics is covered in two years. This particular course deals with all phases of the business and is essentially a background course

designed to make the executive in one department acquainted with the major duties and problems of the other departments and of the institution as a whole.

Junior Organizations. A number of our correspondents speak with great enthusiasm of the value of organizations of juniors. One company has recently divided its junior executives into teams of two or three under a senior executive. Meetings are held on one night every two weeks, when these teams present their solutions of problems which have been given them in advance. These problems are real and are designed to give the men information about departments other than their own. Frequently the teams meet before the regular meeting night and discuss and consider fully the answers to the problems. They are privileged, as individuals and as teams, to ask questions of the executive in charge of the work to which the problem pertains, but must not ask him for a solution. Then, on the meeting night, two members from each team present a solution. All the executives vote on which has presented the best solution. This, I think, is a very clever and interesting device.

Other types of program are followed by these organizations. Sometimes the boys explain to the others the operations of their own departments and the difficulties they encounter in their work. This naturally leads to a free rough and tumble adolescent discussion of the problems of the organization. While few new solutions and fundamental facts may be discovered by the boys, they begin to sense the problems of management and get that breadth which comes from a knowledge of the problems of departments other than their own.

The leadership of the group sometimes rests with the training department, yet on the whole it is found to be more satisfactory to have an outstanding line executive interested in juniors become the active manager, while the training department takes charge of the details and sees that he carries on his work effectively.

Executive Conference. Another form of instruction that is extremely valuable for juniors is attendance at executive conferences. It is a growing practice to allow young executives to meet with the older executives when the problems of management are being discussed. In all companies, of course, executives get together from time to time for conferences upon important problems connected with management. In some cases it is the practice to require, and in other cases to invite, the assistants or selected assistants in the departments to attend these conferences with their chiefs. By such a procedure the young men see the problems from the executive point of view, and therefore take a more intelligent view of their own problems.

In addition to executive conferences training conferences are frequently held by major executives who feel the need of talking over the problems of handling people with their foremen. They give them instruction in methods or draft the training department to lead the discussion. To these conferences the juniors are frequently invited. In still other cases a limited number of juniors are sent to association meetings at company expense as a reward for bits of work well done. Such a procedure is, of course, limited by cost, but within those bounds the value to the junior in broadening his horizon and giving him enthusiasm for his job is clearly recognized.

Conversations with Managers. One of the most fruitful methods of training juniors is through conversations in which the manager informally talks over with the prospect the problems immediately confronting him. It must be realized, of course, that the executive is a busy man and often has no time for conversation that does not deal directly with the duty at hand. But it is very important for executives to take time to relax and chat with juniors about policies, methods, and reasons for decisions that have just been made. Juniors on their part frequently feel that their greatest stimulation has come from these short and informal periods, when the chief takes a few minutes off to talk over the considerations that have influenced him.

This ability to talk about problems to younger men instead of telling them what to do is a rare gift which not all executives develop naturally. It is very much easier and less time consuming for the executive to tell his subordinates what to do, or to turn tasks over to them with the bald command to take charge of them. From one point of view more time is consumed, and time which often appears to the busy executive to be very valuable, in talking about problems and methods of solution and major policies. Yet, in the long run, time is gained when such talks are properly conducted, because the aid given by the subordinate becomes much more intelligent. He is, on the one hand, better able to think problems through for himself and, on the other hand, he sees the reason for what is done, whether the reason be good or poor. He is, in short, by this means taught to think under guidance and thereby avoids some mistakes. He, also, learns some new methods of doing things which he might never acquire by himself through his own gropings.

Absorbing Ideas. One of the main problems of the junior in training is to become aware of the problems of management. Many people look at things with their eyes yet do not see them with their minds. There are subordinates in front of whom from day to day problems pass of which they are not at all conscious. The good junior, therefore, is an alert young man who watches what is going on, listens in on conversations, and through his mental curiosity finds out what is being talked about and what the topics of conversation mean.

Someone has said that the chief reason why an expert workman may fail to become a good executive is that he is unable to see the operations of his department from the point of view of management. This I believe to be true. If it is, then one of the important problems in the training of juniors is to get them to see, to realize, to feel, and even to list the problems which come through the office of the chief who is coaching them.

A number of interesting devices are used to help the junior absorb the managerial problems of a department. One organization uses the very fine device of requiring the junior to read the correspondence files so that from the perusal of their contents he can make a list of the questions that come to the manager for disposal. A rather complete file for a year in a company where matters are disposed of largely by correspondence provides a very fruitful source for locating problems. Other companies, that do not have their files so compact or have not thought of using them, frequently assign to the junior the reading of the incoming mail for the same purpose and, later, the reading of the material in the filing basket to see what disposal has been made of the problems.

To catch those problems which are settled orally it is recommended that during the period of training the junior have the opportunity to sit beside the manager's desk and listen to the interviews that take place, and make notes of the problems which arise. This procedure can easily be handled so as to avoid embarrassment. If a caller has a private matter to take up with the manager it is a very simple matter for the manager to sense this and give the junior some commission which will take him out of the office. The situation is not very serious because nine-tenths of the problems which come before the manager under whom the junior is working are impersonal and public within the organization.

As a result of this absorption of problems and managerial atmosphere the junior is prepared at any stated time to make a classified list of problems of the office, and he will undoubtedly have a good deal of information about how the manager disposes of them.

Routing. In many organizations training is given by routing prospects through those departments which are related to the one in which he will work. In some cases he is routed through all the major departments; in others through allied departments. A decision as to the number to which he should be assigned is dependent wisely upon the number with which he needs to become acquainted in order to fulfill the duties to which he may later be promoted. A junior whose ability will probably not lead him beyond a minor executive position will obviously not need to receive a training as broad as that of one who seems to possess superior executive ability. Moreover, a very large organization, with parts sharply differentiated in function, may not demand for any of its executives below the major level a broad knowledge of all departments.

A Definite Schedule. In routing juniors through departments the first essential is to provide a definite training time schedule. This will be a general training schedule when it is the practice of the company to route a relatively large number of young men through the organization year by year. It may be an individual schedule when the routing is less frequent, or when the prospect is being prepared for a special type of position. In either case the schedule must be clearly and definitely worked out.

Junior Specifications. In diagnosing a routing program which fails to train the prospect, the first thing to investigate is the specifications. I know from reading the reports of our correspondents that many companies do nothing more than turn the junior over to a department to work in it for a specified length of time, and leave entirely to the manager the assignment of duties. Naturally one can forecast what will happen when this extra load is put upon the shoulders of many busy executives. The prospect will have to pick up for himself what he learns.

Companies that give more attention to training, however, send the junior into a department with exact specifications of what he is to do. Sometimes he is given a list of dozens of questions for which he is to secure the answers while he is in the department. We believe that the more detailed and numerous the questions, the more the learner will get out of his experience. We have in our correspondence samples of printed forms prepared by the training department to be used for this purpose. and as much care is taken in pro-

viding specifications for the junior on these forms as is taken in preparing blueprints for the production department; for the organizations that follow this practice realize that the training of their future managers is of more importance than is the manufacturing of products.

These specifications sometimes show the total number of days the junior will be in training; the list of jobs to be covered in each department, the time to be spent on each job, a list of important points to be noted in the department and on the job, and points to be looked for and considered when making a job analysis.

Experience in a department with such detailed and careful specifications at hand is so much better than the mere assigning of a man to a department that no comparison can be made between them. Assignment without specifications is futile and foolish.

Manager's Specifications. It is perhaps not necessary to say that the manager to whom the junior is assigned should be provided with a copy of the specifications given to the junior so that he may intelligently assist the junior to do what is expected of him. It is, however, necessary to add that the manager should be given such other specifications and information as will help him better to assist the apprentice. The methods of coaching the junior are ordinarily a matter of general conference and follow-up by the executive trainer. When the manager has learned how to cooperate in the case of one junior his methods will not materially change with others when they are assigned to him at a later date. Some executive trainers hold conferences with the manager on the subject of helping the "floater," sizing him up, reporting on his work, his strength, and his weaknesses.

Production Standards. There are differences in practice with regard to the standards set for the productive work of a member of the flying squadron when he is in the department. Some of our correspondents state emphatically that when he is placed on a job in a department he is subjected to the same standards as the regular employees in the department, and he stays with the job until he has reached that standard. They repeatedly state that no distinction is made between the standards set for a visitor and those by which permanent employees are measured.

On the contrary, other companies send the man into a department with the major purpose in mind of giving him acquaintance with the job rather than skill in performance. They feel he has gained all that is necessary when he has done the job a few times so that he gets the feel of it. Which of these two requirements is superior I have no way of determining. I can see that in some companies, particularly in highly technical production plants, thoroughgoing skill on operations is essential. I can see, on the other hand, that such a requirement might lead to a great deal of waste, when the requiring of the last 10 per cent of skill, which takes so long to get, may be of no particular value to the junior when he handles managerial problems affecting these departments.

Managerial Problems. At this point in routing, it is important to revert to our discussion of managerial problems under the topic entitled "absorption." The prospect may be assigned to a department for as long a period as six-months or a year without gaining anything except a technical skill and

later a technical background. His training may be of little value in preparing him for managerial duties, and the cause lies in the failure of management to introduce him to managerial problems.

If, therefore, the prospect is to receive any value from his contacts with the department he must at some time or other be brought into contact with the managerial problems of the department, which should be included in his specifications when he enters. He should be expected to secure information about the problems which confront the management and similarly the manager should be instructed in his specifications to make it possible for him to secure this information. Methods of bringing this about have, in part, been described, and will be reverted to in succeeding topics.

Manager's Reports. While the prospect is in a department it is expected that the manager make reports upon the work he has been doing. This report may include such topics as a production record, his ability to get along with other men in the department, and a rating of his personality. Mention should be made in such reports of his points of strength and weakness. These reports are made periodically, sometimes once a month, sometimes at the end of the assignment period. Frequent reports are preferable.

It is pointed out by our correspondents that these reports serve a double purpose. On the one hand, they give the executive trainer and other executives a knowledge of the efficiency of the prospect and, on the other hand, they compel the manager to size up the prospect from time to time. Printed forms are provided for this, sometimes in the form of rating scales supplemented or not by a report of the essay type to which attention was called in the preceding paper on the Discovery of Executive Talent.

These reports are sent up through the executive trainer to the major executives and sometimes are made the subject of conferences. The purpose of this procedure is to keep management constantly informed about the prospects in training who from time to time are considered in filling vacancies.

Two companies mention the plan of having the junior rate himself. They ask him to report on what he has been doing, how well he has been coming along, the difficulties he has met, and what he can do to improve himself.

They also require from the junior an extended report upon the specifications he took with him into the department. When he has been asked to secure the answers to questions, the answers are sometimes required in written form chiefly as a means of getting a clear idea of his ability. Sometimes it is found that the suggestions which these people make are of direct use in modifying the methods of the department and as such are of value to the business.

Assigning a Wide Range of Duties. We shall now turn to a more intensive analysis of the coaching duties of the manager. We do this for reasons stated above. Courses and classroom instruction will not produce a manager; he must have a knowledge of the techniques of handling specific managerial problems. Learning to perform production tasks will not guarantee that the individual has knowledge or skill in handling managerial questions. The training department can at best provide directly only background information. The boy, if left to himself, will make too many mistakes. Therefore, personal contact with the manager is the heart of the training program.

A manager, in training his assistant or any other junior assigned to him, will first of all make a job analysis of his duties for the sole purpose of seeing that while the subordinate is under him he gets contact with a complete range of managerial duties. . The value of making his formal list lies chiefly in two facts. First, the manager may not think about assigning the young man to some of his duties and, secondly, if he has a list before him as a check he is not so likely to give the junior the most pressing problems and forget to give him experience with other problems which perhaps the manager himself prefers to handle.

The manager will assign problems and duties to the junior. Sometimes these are duties of execution which he will perform as an assistant and see that they are carried out. In so doing, he is given that kind of responsibility which carries information over into action. These duties will grow in variety as the capacities and the ability of the junior to handle them is demonstrated. In addition the manager frequently assigns special problems for investigation. In every well-run department the manager has investigations which he would like to carry out if he had the time, and such projects are exactly the type of thing that helps the junior gain insight into the business.

The junior, in making these investigations, is expected to stay with them for a length of time sufficient to enable him to know the situation so thoroughly that he can present recommendations or suggestions to the management about what should be done. In fact, this ability to dissect what he sees, to get at the heart of a problem and to present it in a clear form, is one of the most important results to be achieved from these learning exercises. It is a matter of common experience that many people who know a great mass of details are not capable of seeing the central ideas running through them. And the man who is not able to analyze with some skill is lacking in one important executive quality.

As a supplement to this type of exercise the junior will be expected to present formal recommendations and reports to the management in order to give him practice in getting things across. Many superior analysts, thoughtful men, can work out a good solution to a knotty problem but are quite incapable of selling it to the management. They may be diffident; they may stand in awe of management; or they may be quite ineffective talkers. A trainer will, therefore, do all that he can to help the junior make a good case for himself when he has definitely made up his mind as to what should be done.

Correcting and Disciplining. The foregoing description of methods would not be complete without conspicuous mention of the responsibility of the manager to praise, criticize, and discipline. Only occasionally do we find men who do not need some discipline. If they are conscientious they need always to be praised because they are filling new positions and are not sure how successful they are in what they consider to be very important undertakings. But praise alone is not sufficient. They need constructive, intelligent, thorough-going criticism of their methods through conferences and interviews, through suggestions and advice. The background of such contacts should be free but vigorous, and the standards of judgment should be high. Since drastic criticism is necessary for artistic success in management praise should be given generously, whenever possible, as a counterbalance.

Giving Responsibility. If we examine the chart presented and recall the fact that the column that refers to action is the one that stands for information changed into performance, we will see the importance of placing responsibility upon the shoulders of the junior. This responsibility may be either personal or social. In giving personal responsibility the prospect carries through assignments which depend only upon his own efforts. Yet much more important are those assignments in which he has to handle people. These should be such as to require him to direct others, to carry on conferences with them, to train them, stimulate them, necessary to discipline them. And the junior should have his responsibilities increased as rapidly as he shows the ability to take on new and different ones. It should be pointed out again that giving responsibility by merely assigning the task to be done and holding the prospect responsible for the results is a much more wasteful procedure than to assign and train and hold responsible.

As responsibilities increase some use has been made in one or more companies of what is called the "put up" method. By this is described a policy of management to demand that the subordinate executive put up to his chief only those problems with which he has difficulty. This device increases the confidence and discrimination of the junior by getting him to distinguish clearly between those things which he has been taught to do and should do without help and those problems which are new and on which he ought to ask for guidance.

Trait Development. Our correspondents feel that the manager must pay close and serious attention to the development of managerial qualities. It frequently happens that the young man inducted into a position of responsibility lacks in one or more of the four traits which are fundamental to management. He may at first lack dependability and fail to carry through with completeness and efficiency the tasks assigned to him. He may likewise lack in vigor, sometimes because of lack of self-confidence and at other times because he does not naturally possess the quality to a high degree. Indeed, there is some question as to whether or not an individual who does not possess personal, physical, or mental vigor to a high degree should be trained to a major managerial position. On this I have no opinion. I have seen a number of very successful executives who were not of the driving kind and who from outer appearances were lacking in a conspicuous amount of personal vitality. But what they lacked in vigor they seemed to make up in wisdom and shrewdness. The junior may also be lacking in that resourcefulness which enables him to think out new solutions for problems, and particularly he may lack that trait of personal leadership which enables him to lead his subordinates contentedly to the completion of all necessary duties. All these traits and others are carefully watched by the manager who wishes to make the most of the material entrusted to him.

Training Programs in Use. I am impressed by the one-half dozen or more carefully thought out training programs for executive talent which were submitted in our correspondence. I am impressed with these because they are good and particularly because they are samples of what should be done by every organization interested in the training of junior executives. Training suffers seriously in many organizations which I know from a lack of definite-

ness and permanence. It is seldom possible to go to a training department and find in one place in permanent form all the training materials that have been used. They are usually found scattered here and there, in one place or another, and in some organizations it is not possible to find important material anywhere on the premises. As a result of this, there is no continuity in the program; when changes occur in the staff, material has frequently to be prepared a second time. To obviate this, I am convinced that care must be taken to preserve permanent records of all materials in bound form and in an appropriate place. The same care should be taken of training materials that is now taken of the records of materials in the comptroller's office.

Frequently in training departments we find that scattered effort is the rule. Nothing is nailed down, effort is wasted, time is lost. It is, therefore, encouraging to see in a number of substantial organizations that these defects are being corrected, that definite programs are worked out with very great care and in adequate detail, and that materials are preserved in permanent form. The lack of system to which I have referred is incidental to a young movement. In time, as the procedures become crystallized, the hazy and temporary nature of the work will disappear. But if attention is paid to permanency the progress will be much more rapid.

The Manager as a Trainer. A discussion of the training of executives would not be complete without a consideration of the willingness of the manager to train those who are under him. In some organizations the managers fail to take training seriously for two reasons. They may feel that they do not know enough, or they may be unwilling to train for fear they train themselves out of a job. It is natural for an executive in a certain type of organization to hesitate to begin such projects, because he knows that if he trains an assistant well he may himself be decapitated at some inopportune time. This, however, has not been reported as a common attitude by our companies. Rather they feel that when a manager does not train it is due either to a misunderstanding of his function as a trainer or to a lack of skill.

To provide incentive several methods are reported. First among these is continued emphasis on the policy that training is a function of management. The general manager may continually put before the executive the necessity of having capable assistants. In some companies the manager is held responsible for a deficiency of well qualified assistants in his department. In many cases managerial executives let department heads know that their standing is improved in direct ratio to the improvement they achieve in this respect in their departments. In some organizations the training of executives has become so popular a policy as to be a matter of prestige when a department has a number of bright and well-trained juniors working in it.

The idea of training as a function of management is given publicity in other ways. One of these is the periodical conference held on juniors. In the ordinary routine of business managerial executives constantly talk over with the heads of the departments the qualifications of the young men under them. Major committees hold frequent or irregular conferences on juniors. In some cases at weekly conferences an effort is made to classify the bright young men of the company on a comparative basis.

We find, however, that the consideration most frequently stressed is the policy that promotion comes only when an understudy is ready to step into the position made vacant. The department heads know that if they are to be promoted they must be prepared to fill the gap they leave. This, of course, is not a rigid rule in all companies, but it is understood that advancement is easier when a competent assistant is ready to fill the duties of the person promoted.

A number of organizations attack the problem of stimulation directly by providing training courses for executives. Sometimes also outside courses are put on; at other times, the educational department holds conferences on training. In this way, many people who ordinarily would not be influenced by other incentives are slowly educated to see the value of training their men.

Controls. No program of training is complete without check-up and evaluation. It is necessary to see whether the manager is performing his duties thoroughly as well as to see whether or not the junior is developing executive ability. In general, the business of checking up and looking after young executives is delegated to one executive trainer. He is usually a member of the training department but may be, and sometimes is, a principal, a manager, or a member of the employment department. In some cases the direction of the program is given to a committee on special courses.

The most frequently used method of discovering how well juniors are progressing is by direct personal contact. In some cases the contact is as frequent as two or three times a week. And in any case it is, or should be, often enough for the executive trainer to know personally how well the individual is developing. These personal contacts are frequently supplemented by oral reports from the manager made to those people in the organization who are interested in the problem. In addition periodical written reports are received from the management. Occasionally, as has been said above, they are made in the form of rating scales. When juniors are pursuing company courses or outside courses progress reports made by their instructors are relied upon for information concerning attendance, punctuality, grades, personality, strength and weaknesses. In these formal courses the junior is submitted to oral and written quizzes. In some cases the general manager may have time to quiz them but, whether he or someone else performs the function, the student is sized up as he goes through the forms of learning to see that he has mastered his work in an intelligent way.

In a large organization it is a matter of necessity, and in a small organization a matter of wisdom, to maintain in one file all the records, reports, and communications about the juniors who are in training, so that at the appropriate time when replacements are to be made full information on all possible candidates may be easily at hand and quickly reviewed.

The reader who has had the interest in the problem to follow through this detailed presentation of principles and methods will realize the truth of what was said at the outset. We have presented more methods than can be found in any one organization, and this composite story of the good methods that can be applied will be of use not so much in its entirety in any one organization, as in its details for those companies that are interested in the problem and find suggestions which they believe will work successfully under

their particular conditions. The one characteristic that distinguishes efficient training of junior executives is the personal, man to man contact and the intelligent interest of the individual executive in the training of the subordinates who are immediately under him. Nothing can take the place of this.

INCENTIVES FOR EXECUTIVES

By HENRY S. DENNISON, *President, Dennison Manufacturing Co.*

Incentives for executives are much more widely used than is commonly known because the large majority of such schemes are not published—some of them being absolutely secret. Two or three investigations that I have known, not directly into the subject but into companion subjects, have disclosed that certainly more than two-thirds of the progressive concerns have some system of incentive for executives. We are equally safe in assuming that the day for description of one plan or another is at least well advanced. We have had a number of detailed descriptions; and they are increasingly available.

What is needed is a rather critical analysis of the real strength of incentives of various types. Let us take the separate features, as nearly as possible, of typical plans and try to make a preliminary analysis as to what each of these separate features might be expected to accomplish alone. The whole subject is, of course, in an experimental stage. There have not been in effect anywhere systems of executive incentives long enough to give us definite evidence as to their precise effects. Most of the schemes now in existence—a huge majority, I suspect—began after 1921. We can be excused from insisting upon final evidence anywhere in the subject, yet cannot be excused from attempting a preliminary analysis of what might properly be expected from the various elements of an incentive scheme.

Our company began in 1911 with the conviction that in the whole subject of profit-sharing it was the executives who had been overlooked. We thought of profit-sharing in those first days of this century as something that would be nice to do for poor and underpaid manual workers, and most of the profit-sharing ideals of that time built themselves around that consideration. Meanwhile, we were very seriously overlooking what the Englishman calls the "overlooker"—the supervisory executive group whose interest was extremely important for the concern. In our own concern we can at least be supposed to have expressed our cordial approval of the idea as a whole; and in breaking it up into parts and attempting to examine those parts critically we cannot be supposed to be "agin" it in any sense.

In order to make some sort of rough approximation of an analysis, I have divided incentive schemes into pairs of groups along eight different lines of cleavage and thus have obtained rather narrow areas, each one of which can be looked at separately. To phrase it differently, I have attempted to discover the elements of which the complex molecule we call an incentive plan is composed, in order to guess at the characteristic influences which might fairly be attributed to each of the elements.

There are incentive schemes which are built to apportion the incentive directly in accordance with the individual performance as contrasted with incentive schemes which apportion the incentive in accordance with a group performance; that is, incentive schemes dependent upon individual performance as against those primarily dependent upon the performance of a group, large or small.

There are cash incentives as contrasted with incentives in stock, and by stock I shall mean non-convertible stock of the company itself, assuming another kind of stock is simply cash one step removed.

There are incentives which are additional to a standard salary; a salary that compares with the market, as against incentives which replace a considerable proportion of salary.

There are incentives which are relatively uniform in amount—steady incentives, as against incentives which fluctuate rather widely.

There are incentives which are based upon a systematic scheme, a written down plan of things, stated in advance . . . each man shall get such and such a portion of something or other, as against the schemes which are arbitrary.

There are schemes which are public—that is, at least among the group involved, the basis of which is known in advance, as against schemes which are secret.

There are incentives which come to large amounts as against incentives of relatively very small amounts.

Finally, there are financial incentives as against non-financial incentives.

These artificial separations of incentive schemes are not mutually exclusive. Any scheme must consist of a great many of these elements; usually it is quite a complex molecule. Nor is any one of the divisions made, cash as against stock, etc., mutually exclusive in itself, since many incentive schemes have both cash and stock in proportion. But in order to see more clearly than we ourselves have yet been able to see into the true nature of the incentive plans which are being instituted now in really great variety, I am making this artificial division and focusing attention for the moment upon the mere "cashiness" of an incentive scheme and what it could be expected to do because of its cash, as against the stock or, shall I say, "stockiness" of a scheme, or what it might be expected to do simply because it is in stock. And so through all the other categories which I shall use.

Individual vs. Group Incentives. Let us consider first, individual incentives as against group incentives or, as stated before, an incentive based upon the recipient's specific and individual contribution as compared with an incentive in which he is simply one of a group, where the amount is dependent chiefly upon the work of the group as a whole, whether he scamps his job or does double or treble the usual job we can expect. Let us focus for a moment upon the bonus dependent upon the individual's work. Obviously we can expect such an incentive to be a strong spur to action. Not so obviously, however, it allows the recipient to set his own limits to action. We have grown righteously indignant for many years over the limitation of output under piece rates. If we are paying piece rates, we at least lay ourselves liable to a limitation which the man might want to set on himself. We don't get quite so indignant over the limitation which salesmen frequently set for

themselves when paid on commission. Yet it is common practice for the commission salesman to figure he has done enough for a day and quit if it has gone pretty well. As a matter of fact, they do say the movie business would suffer seriously in afternoon attendance if all salesmen worked all day. There is inherent in the idea "We pay you for all you do in accordance with what you do" a proper counterassumption: "If I want to quit, whose business is it?" "If I want to work harder, I can"; "If I want to work easier and take less, that's my business!"

The individual incentive, we must recognize, induces cooperation with other members of the group only to the extent that the individual supposes cooperation will serve his own ends. There is no incentive toward cooperation to a degree beyond that which the man thinks would help himself.

Individual incentive allows any degree of internal competition, yet has no influence against what might be a destructive competition. If an individual gets on better and makes a better showing by setting another chap back a bit, that is in the game too—or at least it is in the nature of the incentive that he shall as readily do that as advance his own case in any other way. We cannot look under individual incentives for the development of any wide spirit of cooperation. It is definitely an instrument for developing an attitude of each for himself.

My critical attitude in analyzing this subject attempts, at any rate, to be the scientific critical attitude. There are cases in organizations where just that development of a personal attitude of each man for himself may be the best sort of thing. There are places in our organization where the development of that attitude of each man for himself does us at least less harm, an almost inconsiderable harm. There are not many such places in our particular organization, but there are some. In apparently criticizing this or that element in incentives it does not mean, therefore, that they have no place—they may have a very proper place.

On the other hand, a group incentive based upon the performance of a group of people rather than one alone, obviously offers a weaker spur to action. It is perfectly possible for a man to scamp his job entirely. There may be another reason against scamping—the eye of the boss, salary, or something of that kind, but now I am speaking of what the incentive itself is to accomplish—nothing more. Obviously he can scamp his job 100 per cent and ride on with the group and get his share at the end of the year just the same. Group incentive, however, induces a wider cooperation than the individual incentive; and where cooperation is of major importance the group incentive must be considered. It can have a specific and active effect year after year towards knitting a group into a true organization. It helps build that organic unity which must exist if we are to call any group of people truly an organization.

A group incentive has a spur to action frequently overlooked, yet rather important, very much so in some special cases of group incentive. There is a type of supervision involved in group incentive that is quite valuable in certain cases—the supervision of the other members of the group. It is true in our own case, very greatly, that such supervision is not a critically negative supervision—rather it is constructive and affirmative. Our plan, I am

sure, has a greater effect upon our principal executives more by virtue of the possible criticism of their fellow executives, than by virtue of the cash in hand obtained at the end of any given period. That is partly because ours is not cash in hand, for the most part, but is stock in hand.

There is really a very powerful incentive to individual performance of one's own job lying in the opinion of the group one is working with, when that group wins or loses, shares in the profits that a group incentive scheme gives. In small teams of five or three workers in the factory, where the team is close together and can see what each member is doing, it has been repeatedly found that the new type of incentive to action is the criticism of the other members of the team for anyone who lies down on his or her job. Group incentive creates that rather new spur to action, one which under certain circumstances would be of the greatest value.

And that new incentive working in all grades, under favorable circumstances is the most powerful single influence upon our principal executives, due to our partnership plan. It is also a very powerful incentive in several of our group piece rates, or group task and bonus rates that we have throughout the factory.

Cash Incentives vs. Non-convertible Stock. Cash incentives, of course, have a strong spur varying in strength with the nearness in time or the remoteness of the day of distribution. It is at its strongest around the time of the distribution, and is weaker both before and after. It strengthens along towards Christmas time—the way a Christmas tree and Santa Claus work on the small boy—and survives for a longer or shorter spell, according to the man. Consequently cash incentives are frequently distributed at short intervals over the whole year. Where the cash incentive is given to the manual worker, who can be supposed to have a rather shorter range of imagination than others, it is often given once in two weeks in a separate envelope, or once a month. I should not be much afraid to maintain that putting a cash incentive in an envelope once a year for the manual worker is virtually without effect for ten months. Probably it is more without effect than we realize in the so-called higher grade worker, or the executive. In any case, it varies in strength, coming to a peak at the time of distribution.

Cash incentive, we must not forget, always involves a concentration of interest on the spending of said cash. That concentration works in all sorts of ways. It is popularly said (and our own employees very definitely said it in working out a plan for themselves) that the knowledge of a probable cash incentive coming quite universally induces spending among manual workers before they get it. So by their characterization, an annual cash incentive to the manual worker meant something he got that only partly paid the bills he had already incurred because of it. It was always spent beforehand, and usually overspent.

Let's look at the other extreme of that picture. I know of a case where a distribution to executives was so heavy in extraordinarily good times that it is actually true that several of the very important executives could not be found at their places of business for months afterwards—because they were playing the ticker and could make more money in playing with this large investment than sticking close to business. In other words, we must realize

when we talk of cash incentive that it is the total reaction we have to think about. It is not just the spur to do the job well that is all—it is much more complex than that. There are these other influences which will decidedly bear examination. We have to consider the intense influence of a cash incentive, the effects of disappointments, and the distractions I have already mentioned.

In the stock incentive (and there again I limit that to a not easily salable or actually transferable stock in the company the man is working for) we have, of course, a much weaker spur than the cash, so weak that in the early years—for at least two or three—we need expect no visible results to exist, perhaps none at all. To receive some non-convertible stock at the end of the year is obviously not an intense spur to hop around and do a great deal better job. To the man with imagination enough to see that it is actually good and amounts to so much in cash, it has some additional advantages; but to the average run of man it cannot be looked to as an active spur in many years. It has, however, this advantage—it has an accumulating effect which is a steady one.

If the incentive plan gives stock each year one can at least be sure of one thing—the man has the last year's incentive still on hand. Being non-salable, he cannot get rid of it, and this year's incentive adds to it. One has (and this, of course, is again in accordance with our own experience) an incentive which practically begins at zero, starts very slowly, but always grows in the depth and strength of its power.

The cash incentive requires repeated doses. A single dose of last year is done for when it gives out. If one has no more next year the effect is gone. The stock incentive has a persistent effect. It arouses the complex of motives which are very powerful—what we call the sense of proprietorship or ownership—something fairly deep in human nature. Having stock in the company, being a proprietor—even to a small extent—has a distinct and decided effect upon people by its own virtue.

There are not two kinds of incentives, one wholly cash and one wholly stock. As a matter of fact, most stock incentives depend at least upon the cash dividend to give cogency and value to the stock itself.

The Bonus. In an incentive which is additional to a standard salary we have, of course, a smaller and less intense spur. One is going to get his standard salary anyhow. If he receives the incentive or bonus in addition, that is all to the good. It appeals most to those who value security, generally speaking, to the older men, with their expenses and status established, who are not so fond of taking a chance sometimes of biting into their regular income in order to get at other times what may be a very great increase.

That need of a certain degree of security can be observed where piece rates exist, and is one of the many causes that results frequently in restriction of output. Not all men like a widely fluctuating weekly income. Not all women, wives and householders, care to have their income fluctuate widely. There is a strong tendency among the men who value security to set their performance at a mark which they can keep up week after week, and not go too far above that mark, at the risk of dropping again.

A similar condition operates where the incentive takes the place of a considerable part of the salary. It is not uncommon, although rather less common than the additional type. Some firms pay hardly more than a retainer as a salary, and have an incentive ranging from one-third up to two-thirds of the man's total income, dependent on the times. That has a very powerful effect, one way or another, sometimes favorable, sometimes not, very largely dependent on the type of man. It should be used, therefore, only where, with that effect in mind, it seems to serve the purpose. It appeals to the chance-takers rather than to the steady sort of person who values security above a chance of considerable gain.

The Steady Incentive. The effect of the steady incentive as against the fluctuating is similar. There is rather a mild effect in the steady incentive. The funniest one I know of is a scheme which guaranteed 15 per cent each year, called itself a profit-sharing scheme and then simply wrote down that each man would get 15 per cent of his wages. Of course after two or three years, the 15 per cent became a definite part of his salary and there was no extra incentive to it at all. A steady incentive does not have to be as steady as that, because after a while it would be written down as part of the regular income and, of course, written off the incentive column entirely in the man's mind. A moderately steady incentive appeals, again, to the lovers of security as against the chance-takers.

The fluctuating incentive obviously is strong. It invites trouble at both extremes—when it is too big and when it is too little. That must be understood in advance of anybody tackling an incentive scheme where fluctuations can be properly expected. If there are no fluctuations then one has to give up some of the strength of the incentive plan. If there are fluctuations one has to expect a certain amount of trouble at certain times, which helps pay for the good he gets at other times. There is obviously an optimum rate and range of fluctuation. There can be too steady a scheme, and there can be one too widely fluctuating for ordinary purposes.

The Known vs. the Unknown. The systematic scheme is the antithesis of the arbitrary. This is similar to a public as against a secret plan. The systematic scheme is usually made known; the arbitrary is always secret.

We must realize that where we have a regular incentive system the assumed virtues or vices of the system itself affect the incentive. The system is known and therefore is subject to the judgment of the recipient. If he does not think it a good system the incentive is not so strong as it would be if he thought it a good system. Any system will be subjected to a variety of abuse—none can be accepted wholly by all recipients. The recipient, at any rate, can be expected to work for his own interest within that system.

The arbitrary scheme, secret in its very nature, induces the recipient to guess at what will be his best course, to guess at what kind of basis is used in the distribution. And if it is supposed, as it would ordinarily be, that it depends upon his superior and the next man up above him and their views, then one can expect the man to work for the good opinion of that superior; which is by no means the same as working to do a good job in his own particular bailiwick. If he supposes that his share depends upon the recommenda-

tion of his superior officer, he will be certain to keep on the right side of that man, if he can, and work consistently to that end, which is not always the same as doing a splendid job in his own corner of the universe.

A secret and arbitrary scheme induces doubts, suspicions and erroneous calculations that must be accepted as part of the price of such a scheme, if adopted. Arbitrary schemes have less harm, at any rate in a small group involving only a few people fairly well known to each other, and the arbiter pretty well known to all. Then the evils of the arbitrary and secret scheme are distinctly minimized. Where there is a very large group the evils ought to be looked into pretty carefully.

Of course, as a matter of practical fact, executives' standards being so difficult to fix, and a system being so difficult to build, an arbitrary scheme is many times the only possible plan. Frequently it is the best one to start with until the outlines of the system shall disclose themselves through experience. In any case, whether it is necessary or a matter of choice, it is important to focus attention upon its peculiar effects.

Large Amounts vs. Small. As to the size of the incentive, it ought to be more widely realized that there is not any simple arithmetic relationship such that twice the incentive has twice the effect. That relation exists perhaps in the middle ranges, but there is distinctly this to be said: that below a certain minimum an incentive can turn into an anti-incentive; above a maximum an incentive can turn into an anti-incentive. Perhaps the latter is not so obvious, but if one sets precise cases before his imagination both truths will be confirmed.

That there is a minimum became clear when we were working out the extension of our partnership plan to our manual workers. One of the questions asked was: What is the least, averaging over a period of years, that will have any effect as an incentive? Obviously if a skilled workman worked hard and enthusiastically all the year and got \$10 worth of non-convertible stock at the end, he would be incited to put a bomb under the plant—not to work harder next year. There is an amount so small that it is best not to have any scheme at all.

The same thing is true of executives. We had in our suggestion plan at one time a \$1 and \$2 award for accepted suggestions. It appeared after a period of years that the one and two dollars seemed so extremely small to the sales department—seemed so petty to men used to getting the larger salaries—that actually it was working against the suggestion scheme. So we changed the scheme and when we could not pay as much as \$5 we paid nothing at all.

There is a sort of Gaussian curve to the amount of incentive: There is a minimum below which it is no incentive whatever and a maximum above which it starts up so many other influences that its effect as an incentive to active and energetic work is smothered. The greatest good per dollar lies in the middle ranges.

Obviously all of these we have talked about are financial incentives and can be supposed to work upon those impulses in a man most readily influenced by money, his actions, his day-to-day intellectual efforts, his planning and scheming. The non-financial incentives, on the other hand, for the most

part influence his attitude, the subtler human emotions of loyalties, feeling of affection, fitness, and all the rest.

That part of the man is, moreover, of great power. We know in war how enormously powerful is the emotional condition of men, how feeling toward the whole thing can give strength that no more tangible motive could ever impart.

Combinations. Dividing up the whole field offers possibilities of clarifying in some way our minds, which tend to be confused by the great variety of schemes necessary to fit the variety of circumstances of one concern or another. We can see through the subject only if we examine it and see it in its separate parts. Any incentive plan of any importance or significance will be a combination of a multiplicity of elements, and we must know something about what those elements can be expected to do if we are to develop a successful scheme.

For example, if we want immediate and marked results we should choose such a combination as an individual, cash, fluctuating (not too heavily), systematic, public incentive of medium size replacing part of salary. That type of scheme would act immediately and act strongly. If, however, the principal objective was the development of an organic unity in the concern—the development of a spirit of team play, of cooperation—then a slower but deeper working plan would be the group incentive—stock additional to salary, fluctuating moderately, systematic and public, with a strong emphasis on the non-financial incentives.

Arbitrary and secret schemes are probably temporary forms which would have little to say for themselves as permanent forms.

It is especially important that an organization, having or considering an incentive plan, should examine its own needs to see whether it wants to stimulate intensive individual action or to cultivate strength of group structure. It should not go into an incentive plan without clearly attempting to find out what it wants that incentive plan to do.

Very naturally, in the rush for incentive plans in the last half-dozen years, there has been much too little examination of what is wanted. Working for one's self alone is easy to stimulate. To work snugly in team with others, supplementing their weaknesses, tolerating their failings, inspiring their best, a man must somehow be led to regard his organization as something a whole lot more than a good milch cow. In the close-knit structures which are likely to win tomorrow it is not so often the lone-wolf brilliancy we pray for, as a ready grasp of the elements of team play, the soberer virtues, not so common, and always of very slow growth.

The strength of the total organization of the team will turn out in the long run to be greater than the strength of a lot of brilliant star performers working each in his own way and each principally for himself. Yet that may not be true in special cases. All I plead for is a critical examination of what it is exactly that the organization wants of an incentive plan before they start in at all.

Of course, these elements that I have tried to set forth affect each other. No living organism can escape the principle of circular response¹ For

¹ See FOLLETT, MARY P., "Creative Experience," pp. 53-77, Longmans, Green and Co.

example, the fluctuation factor, which I have attempted to examine separately, has a greater effect if the fluctuations are in cash rather than in stock. Fluctuations in group incentives have somewhat different effects from fluctuations in individual incentives. In both cases they intensify the incentive, but in each, and especially in the group plan, they bring out some fresh characteristics.

The fluctuating, arbitrary, secret combination has very special dangers, and a fluctuating arbitrary secret and individual scheme has even more serious dangers; in these also the separate elements react upon each other. We are only attempting to separate them in order to see a little more clearly into the whole complex subject.

Finally, no thoughtful concern should ever leave an incentive scheme alone to work by itself, although some thoughtful concerns have, I confess, done so. At any rate they should not in the future. The scheme, whatever it is, is influenced in its effects by the attitude of sincerity, of faith, of confidence, which builds itself up around it; by the freedom and effectiveness with which any current facts pertinent to its working are made known. Any management must realize that an incentive scheme affects those in the organization who are not included in it; and in its turn the scheme itself is affected by the attitude of the excluded toward it. One cannot escape that. A scheme, particularly one in which there is only a very small group of men sharing in the incentives, must be weighed as to its value against the anti-incentive that is upon those not included, who must let down somewhat in their efforts when made conscious of their exclusion day after day by seeing the chosen group of people whom they know to be included. The effect upon the excluded is one to be counted by management in considering incentive schemes.

New Plans vs. Old. It is true, too, that any plan is different in its effects when new than when repetition and familiarity have been at work, for better in some cases, for worse in others. In a complete audit of the value of an incentive scheme, not merely this year but the years of the next decade must be made to render their accounts. The early eagerness to make a showing may turn to satiety or conservative fear. In some stock incentive plans this conservatism must be definitely guarded against.

In discussions of incentive schemes today, while the subject is new, there is stronger enthusiasm for their effects than a cool social psychologist could possibly justify. But that is partly the effect of the idea itself and partly the effect of its newness. A new scheme, put in as against nothing at all, is more effective while it is new than it is as it grows older. That, of course, is in accord with human nature. The repetition, year after year, is in itself a definite part of a scheme and has to be counted as such. It can be made to work for good; it can be made to work for evil. My only claim is that it must be recognized.

We have noticed in our own case decided differences in the effect of our plan in the early years and later; and a similar difference in its present effect upon men who have been in from the start and accumulated a fairly considerable amount of stock as against those who are just in a year or two and are beginning their accumulations. Upon men who have had the possibility of sharing presented to them year after year, and with whom it has become

fairly habitual to think that their efforts will finally result in value to themselves and to the group they are working with and upon men on the other hand, who see it for the first time, the difference in effect is decidedly striking.

Schemes of companies must be gauged to the run-of-mine men. No two men are exactly alike. Anybody dealing with incentive schemes or any other scheme having to do with management must realize that odd sticks in human-kind must be expected, and somehow or other handled. But the plan itself must be calculated not for these special folks, whether they be particularly favorable or otherwise, but must be calculated to work upon the great middle section—85 per cent of mankind. Too often I have heard a scheme argued for or against on account of the effects on one man who went up to the boss and said this or the other. Sometimes he was boot licking the old man, telling him how wonderful he was. That is a danger our judgments undergo—especially in executive plans—that we often hear from Jones or Johnson how it affects him. But we won't necessarily discover how it really affects him by listening to what he has to say about it. Our judgment must be based upon the group as a whole and not upon the persons who come up and talk about it, pleasantly or otherwise.

Non-financial Incentives. There remains, after all the financial incentives have been worked out, the more powerful, the larger, and much more difficult field of the non-financial incentives. They range from a quite intangible company tradition through a hope of promotion, an atmosphere of emulation, a spirit of the team, conditions which allow of a proper pride in one's work, fondness for one's boss, special distinctions of title or privileges of position; through the powerful social incentive of satisfaction in belonging to the group, so effective, for example, in the teaching profession; finally, to the high professional appeal so astonishingly developed by the telephone company and apparently, in their case, without a special subsidy or bonus scheme.

All these, and plenty more are incentives of a cogency not to be denied which pull upon those powers of a man that financial incentives cannot reach. Try to buy patriotism, not of the audible but the honest sort. Try to buy the power to stand at Verdun. Is it not significant that armies depending upon financial incentives—that is, mercenaries—have long since failed as any significant sort of military organization?

In work, the results of which are very difficult or for the moment impossible to measure, an individual financial incentive may easily do as much harm as good. In executive work and in selling, just as much as at the bench, there are penalties often hidden for years in setting incentive rates in advance of a thorough job analysis and control of job conditions. The old lesson of the factory is not to be lost sight of—piece rates set on guesswork gave us immediate results that fooled us completely; things were often so bad before the piece rate was made that an immediate improvement was a cinch. Then, very slowly and gradually, and in hidden ways, year after year, the evils of that guessed-at piece rate began to develop and sometimes we went through a type of hell to get rid of them, and sometimes we did not even succeed in getting rid of them at all.

Very much the same is true, on a wider scale than anybody appreciates, of salesmen's commissions that have set themselves—the greater good of which was probably accomplished at the beginning. The greater evils have been accomplishing themselves ever since. We know now that we cannot expect all machinists to discover the best ways of doing their work just by giving them a piece rate. It is to no degree more probable that the salesman or executive will discover his best way under a like spur. Where conditions are not under control it is notorious that individual incentive rates result in many injustices.

One of our section chiefs put the matter rather concisely in our forum. He said: "What our work on setting standards and incentives for office workers did strikingly, was to set forth the best use that could be made of their time." It was one of the principal benefits. It made clear what was the best use that could be made of their time. "What the supervisors lack," he said, "is a like knowledge of how they actually are using their own time and how better to use it." Not one man in a thousand, I suppose, could carry on a job and at the same time observe how he is and how he should be carrying it on.

The same thing is true of all our executive jobs. One of the best things we can do is to have a round-up job analysis of exactly what executives are doing and how they are doing it. Without going too finely into it, to set the beginnings of some kind of objective view, objective standard, is in itself a powerful incentive. An extremely strong part of the incentive idea all around lies in the concentration, the reorientation, and the refocusing of attention that any critical and objective examination of the job induces. And there are a number of cases to prove that where the analysis is too uncertain, where the standards are too varying and uncertain to allow the fixing of incentive pay, strikingly good results have been obtained by merely making the rough standards known.

We had a good example of that inside the shop where we worked hard to set an incentive pay for guillotine cutters, and had to give it up. But merely making the standards known to the workers resulted in something like a 30 per cent increase in production. So even the roughest sort of preliminary analysis may work out and may often work more successfully without an attempted financial incentive than with one.

Thus we reach the fact that one of the best incentives for both immediate and long-time results is high-grade management. The manager who knows what his crew should do, who can teach them how best to do it, who knows currently how nearly they are living up to sound standards, is in himself an incentive of no mean order.

It is certain, of course, if adequate management is absent, that all other sorts of incentives lose largely in their good effects and many may turn bad. A good incentive plan under bad management is likely to have bad results.

Far from being any substitute for good management incentive plans make great demands upon management. Carefully thought out and well supported by management, incentive plans may lead on into high non-financial as well as financial successes.

PRINCIPLES OF INCENTIVES FOR EXECUTIVES AND KEY MEN

By J. P. JORDAN, *Partner, Stevenson, Jordan & Harrison*

Times change. Men change. Mental processes change. Changes of all sorts are constantly going on. Interest which we take in a certain subject today shifts to another tomorrow. A feeling of intense interest in our job today changes to a feeling of "what's the use" tomorrow when the controlling stockholders announce a sale to or merger with another company.

It's in the air to be nervous about our work, our jobs, our families, our future. The larger the company, the further down we are from the top, the less our feelings of security; the more we feel our entire dependence on the whims or the schemes of the big bosses, never knowing whether there is such a thing as permanency of job, policy or even continuity of the business as is.

Most of our nervous reactions are imagined. They are but the reflection of things in general. But the nervousness is there just the same; and, psychologically speaking, our performance is restricted; our initiative checked; our happiness clouded; and our real value lowered.

The writer's work brings him in contact with many organizations. Let the slightest rumor of a change in management, a merger, a sale of the company or any other thing of like nature occur and such thoughts immediately become uppermost. They absorb the time and thought which belong to productive effort. Conversation is largely concerning the rumors. In other words, the actual observation of the writer in a number of cases has shown a heavy percentage of the time of the best men of certain organizations wasted in speculation, discussion and worry as what was going to happen or what might happen.

In the great majority of cases this interruption of productive thought and effort came about through a sort of inferiority complex arising from the realization that after all, most men concerned were purely *employees*—on a salary, differing only from subordinates in the size of salary. The size of salary itself aggravated such a situation because a new broom would always aim at the big salaries when it thought it had a spectacular job to do in trying to justify a merger.

Therefore, industry and commerce has a problem on its hands, not only to make a consistent and satisfactory net profit, but, in order to increase and stabilize this net profit, so to give heed to the psychological call that every means be resorted to in order to safeguard the mental attitude of the personnel of the organization against fear, nervousness, worry or any other harmful mental reaction.

Incentive methods for key men and executives provide a very effective safeguard against the detrimental factors just described and besides, they increase profits. There is no doubt about that.

We shall deal with this subject under certain definite headings.

Conditions as to Organization and Procedures. To provide proper incentive methods, there must exist certain conditions:

1. *Leadership.* There must be a leader heading the organization who *believes* in men, *makes* men and then *leads* men to do big things.

2. *Definite Responsibilities.* There must be a definite plan of organization, clear definition of duties and in all ways a clean cut organized procedure.

3. *Knowledge as to Operations.* There must be adequate records to back up all responsibilities—and no more.

4. *Marks to Shoot at.* There must be standards to meet and beat. This means a setting up of what *must* be done to make a normal result.

5. *Extra Remuneration for Beating the Normal.* This is the subject of this discussion—an incentive plan whereby extra remuneration comes automatically for results which beat the normal.

Let us assume we have the first four items in fine shape. We may now proceed with the matter of incentives.

The Necessity for Incentive Methods. Business today requires thought and action far beyond what has been the normal of past years. Competition in staple lines, competition in improving lines which depend on design or quality, competition in lines where style changes and fickle fancies dictate, competition between volume seekers and all other kinds of competition require a concentration of effort, judgment, and skill in all the functions which make up a business of any kind which must be far more effective than any such effort in the past.

Capital is impotent beyond furnishing the plants, materials, labor, and all the other elements which may be bought. But the skill necessary to design, fabricate and sell products at a profit must come from the organization. This organization is made up of human beings, some more and some less skilled in their several scopes of ability, but each one human and subject to the same emotions.

A common human trait is to settle into routine—physically and mentally. The great majority of human beings become fixed in habits of thought and action, a natural thing when we consider that most of us in early life come up through more or less routine work where only those who fight it off through study, reading, and dreaming of bigger things succeed in breaking the spell, emerging into broader and more effective lives.

Then as we get more settled, home responsibilities, outside interests of various kinds, real or imagined physical troubles and all other conceivable things influence us to regard our jobs as the wage or salary source, looking for all the raises the traffic will bear and thinking ourselves fixed for life, resulting in a type of service which may be normal but is far from what is necessary today. Length of service unconsciously builds up such cases as just described. Mortgages on jobs become numerous in the minds of the majority. This class of mentalities is found in all grades throughout an organization from the bottom clear to the top and the pity is that such conditions exist, but they do. The cure? Not wholly—but substantially—incentives for efforts and action *beyond* this normal.

It will be said, such conditions as just described do not exist among key men and executives. But they do, and sometimes to a worse degree than among the lower grades. In any event, the unused latent ability in every key man and executive, according to many authorities, is as great as that which is used. That is, the percentage of effectiveness of the great majority of key men and executives is, on a normal basis, not over 50 per cent—

probably less. This statement will undoubtedly be disputed and there is but one way to prove it to the satisfaction of each individual.

Did you ever actually study your own time, the uses you make of it, the accomplishments you produce and the real yield which comes from the brain effort you exert and the time you actually spend? Can you not remember right at this moment how many good germs of ideas have floated around in your imagination that never have been incubated into a valuable plan? Can you not name right now a whole array of things you would like to work out but that you think you have not had time for? Will you not without further thought admit that many such germs of imagination of actual ideas might have been put up to someone to work out long ago? Could you not, if you had enough such ideas, have very profitably hired even a new individual to follow through on a lot of them?

In other words, how many of us would admit that we are perfect or anywhere near it? How many of us dare even to think that we approach the best there is in us? How many of us feel that any of our associates or subordinates are themselves anywhere near the point of perfect use of brain and physical capacity and ability? But granting all this, who can be perfect or can anywhere near approach 100 per cent? Admittedly, no one. But a 50 per cent increase in yield from brain power on a 50 per cent existing effectiveness still means an allowance of 25 per cent for ineffectiveness, and this increase of 50 per cent of existing effectiveness means wonders.

Only three things actually spur any of us on to real accomplishments. First, the joy and satisfaction of accomplishment; second, the fear of results if we do not accomplish, and third, a direct financial interest in the results of our accomplishments. Now, combine the joy of accomplishment with the joy of increased income from greater accomplishment, and we find a combination of tremendous power. Even the increased remuneration from better accomplishment without the joy is sufficient to produce great results, as in most cases, those who lack the joy of accomplishment want more earnings to be able to have whatever they do take joy in.

Salaried men as a class lack the spirit of proprietorship which in itself is a most powerful driving force. Such salaried men in key or executive positions are transformed when they are put in a position where, on measured performances, they automatically share in the savings from better performance or in the increased profits which result, or both. Any man who says he is doing all he can possibly do is absolutely wrong. Not one of us can truthfully say that. Any man who can truthfully say that he would or could do *no more* under an incentive plan than he does now on a salary has no remote idea of the psychological result of incentive stimulation.

It might be mentioned here that incentive plans should never take the place of or affect salaries in any way. A salary should be paid everyone to an extent commensurate with the position which the company wishes each individual to hold in the community or business world, where every reasonable item of living expense is covered in order that there may be no worry or mental interference with effective work.

For this salary normal effort is expected. This normal effort equals the normal return to stockholders allowed on the net value of capital invested.

Then, through a combination of profit sharing and savings sharing, the key men share results better than normal with the stockholders.

Incentive remuneration taps the hitherto unused forces. It brings into the picture a sporting instinct which lies dormant when on a straight salary. It stimulates imagination; it promotes more profitable use of time; it increases the feeling of responsibility; it opens visions of a better home and more for the family; it leads to dreams of a family more generously provided for when left alone; it makes men out of morons, and bigger men out of big men. Why? Because everyone feels, "this is my business"; and when anyone feels that his job is his own personal business, that the results are his to accomplish and that a better accomplishment means greater income, a psychological force is set into operation which is one of exceeding power.

Profit Sharing, Its Advantages and Disadvantages. For the highest executives, those who are responsible for the overall results of a company, profit sharing alone is indicated and is of the greatest advantage.

For those junior executives, major department heads and others who must work in a closely coordinated manner, it is of great advantage for a portion of their incentive to arise from a share in profits. But only a portion, as they also should derive their incentive earnings from the results of their own particular responsibilities.

Key men below the junior executives and department heads just described should derive their incentives entirely from the results of their own responsibilities. With this class, profit sharing has not only no advantage, but it is, in fact, a very disadvantageous method.

It may be taken for a fair rule that when any responsibility is largely centered in an activity which is but partly contributory to the result as a whole, the incentive plan should recognize that fact and be so arranged that it deals only with those factors covered by each such responsibility. We may draw illustrations for this statement from such activities as all the line-and-staff departments including selling, manufacturing, engineering (meaning all designing and such work) accounting, purchasing, traffic, and so on, with all the subdivisions of each.

For instance, what does it mean to a sales division on the Pacific Coast in terms of ability to be at all responsible whether the company as a whole makes a profit or a loss? But it does mean something as to whether or not they sell a satisfactory quota at an allowed expense or better. A foreman of a self-contained department in the plant hardly knows how to spell the word profit. But he does know what goes on in his department and if a standard performance is set up for him to beat he can go at it with full knowledge and authority. To him, overall profits as a basis for bonus is worse than nothing, as, if he cuts his cost and the company makes no profit, he gets nothing. The psychology of such a result is disastrous.

Therefore, profit sharing is advantageous with high executives, and partly with the next lower grade. Below this grade, it not only is disadvantageous but is positively dangerous. Besides the fact that the higher executives should stand or fall on the net overall results, they and some of lower grade need the effect of standing on overall profits for the benefit of stimulating cooperation between departments. A common purpose is therefore set

up, and it helps to level down the barriers between departments and foster a real company spirit.

Setting Up a Profit-sharing Fund. It might be well to state, while on the subject of profit sharing, that the setting up of a profit-sharing fund is quite simple, although two or three points are usually debated to a considerable extent. First, the value of the net assets must be arrived at. Second, there must be fixed a percentage of the net assets to be set aside for the stockholders as their normal return. These percentages usually run at 6 or 7 per cent except in very special cases.

Next comes the percentage of profits remaining after the stockholders' exemption is deducted, which will form the bonus fund. The writer believes in an ascending percentage, starting fairly low and increasing to a reasonable extent as the profits increase. This method seems far better than a flat percentage, and certainly a decreasing percentage is the height of folly. But boards of directors often balk at the ascending percentage, as they claim that the profits themselves increase, thus automatically giving a larger bonus fund. But, who increases these profits? Capital? No—as capital is inert. Management? Yes—as management, including top executives and all key men, are the ones who do the job. As profits grow larger as a result of greater and greater effort, should not the key men and executives who do the job profit to a greater and greater extent, even to an extent greater than just a flat rate proportion of an increasing profit? The psychology of it is wonderful. It means greater and greater bonuses for the key men; and, as the stockholders always get the lion's share, they too profit to a greater extent, as do the men themselves.

Savings Sharing. Savings sharing does not mean just saving money. It may mean spending more money. It does mean spending less money per resultant performance. That is, if \$1,000 is supposed to design, or manufacture, or sell 1,000 units of performance, and 1,300 units of performance results at a cost of \$1,100, a "saving" of \$200 is made. Or, if 1,000 units of performance result for a cost of \$900 a saving of \$100 is made.

A standard or bogey, or whatever you like to call it, is set up for each measurable unit of every department. Actual performance is measured by the standard, and a saving or loss results. This we shall regard as sufficient to describe savings sharing for the purposes of this paper, as it is not the intention to submit herewith a definite set of specifications for installing such a method.

Savings sharing is superior to profit sharing in that it is applied directly to each definite division which is measurable. What the overall profit may be means nothing to most key men below the chief executives. Even if it did mean anything, what can they do about it other than operate their own departments in a manner to beat their own standards and in that manner, and also in their own bailiwick, contribute their share to the general result?

To accomplish improvement, the measurement, control, responsibility for and participation in the final results of all operations should be tied just as closely as possible to the point where the actual doing of things takes place. The selling district on the Pacific Coast is a responsible and meas-

urable activity. So is every other sales district. So is every department in the plant, direct and indirect. And also the engineering, purchasing, accounting, personnel, and all other departments. Thus, by tying our incentive plan just as closely as possible to each separate responsibility, gauging results to a fixed performance which must be reached before bonus takes effect, we stimulate all kinds of action where each group may produce results irrespective of other groups or the whole.

Maintenance, stores, shipping, tool room, power, and all such indirect departments in the plant can be measured in such a manner as to provide an incentive plan which safeguards the company and promotes extensive savings. Over a given time the ratio of all such indirect costs must be maintained in a manner to assure profits. Incentive methods practically insure such proper ratios.

Engineering effort, covering betterment of product, current interpretation of customers' orders and all other elements of the engineering function must be kept in ratio to a certain fixed portion of the sales dollar. Bettering this ratio brings a bonus.

Sales effort, controlled by quotas of sales at allowed budgets of expense, with a further check as to the margin of gross profit secured, brings in an incentive plan which has every possibility of increased sales at a lower unit cost. Group incentive plans for segregated sales divisions eliminate the old bugaboo of who gets credit for individual sales, and makes possible a cooperative sales effort which is healthy and effective.

Bonuses in all departments may be paid monthly, quarterly or annually. When possible, monthly payments are to be preferred. In companies where more or less violent swings take place in volume, the bonus month may be one-twelfth of the last twelve months, thereby leveling the swings.

Bonuses earned may best be distributed on a point rating for the men who participate. For instance, the head of each department will be rated at 100 points. The next best may be 80 per cent as good and be rated at 80 points, and so on. The total of these points divided into the bonus fund earned gives the value per point, which, multiplied by the number of points assigned each individual, gives the amount of bonus for each.

Only half this amount should be paid in cash. The other half goes to a reserve fund to be retained until the end of the year, against which any losses will be charged. At the end of the year the reserve fund of each major department is distributed on a point basis where each participant in the departmental funds is rated on a basis of the comparative value of each to all the participants as a whole throughout the department. This promotes an overall cooperation, as it eliminates undue competition between departmental subdivisions.

Therefore, with quotas and budgets set for each division of each department, an equitable distribution scheme set up where bonuses earned are shared by individuals in ratio to their contribution to bettered results, we create a psychological force which is very powerful. We fix a responsibility, set a mark to beat and share with those responsible the results which better the mark. Such a scheme brings to each key man a personal sense of pro-

prietorship. It makes men. It brings out latent abilities which otherwise would lie dormant. It increases profits.

Combination of Profit and Savings Sharing. In certain cases, a combination of profit and savings sharing should be used. As has been stated before, the highest officials should stand or fall on profit sharing. But others may well participate partly in profit sharing and partly in savings sharing. In order to illustrate this point, let us assume a large company where there may be a president, and at least a vice president in charge of distribution and another in charge of production. Under the vice president in charge of distribution may be a general sales manager and other key men. Under the vice president in charge of production may be a general works manager and other key men. The president and vice presidents should be in profit sharing only. The general sales manager and the general works manager may better receive, say, one-third of their bonus from profit sharing and two-thirds from the results of their several departmental activities on the savings sharing plan.

The effect of such a method is obvious. It softens the partiality for departmental prerogatives and brings in the overall profit feature. It insures cooperation between departments, but at the same time stimulates the efforts to cut down departmental costs and increase departmental performance.

Interminable combinations of this nature can be worked out and must be worked out, as no two concerns have like relationships between their several departments. Therefore, each separate concern must work out its own combination.

The point to be brought out is, therefore, that with some participants, both profit sharing and savings sharing should be used. Such a combination means the preservation of cooperation while at the same time hammering down departmental ratios of cost.

Publicity of Methods. Now we reach the ground of endless debate. The questions are: first, should the exact method of computing bonus funds be known by the participants and second, should the exact basis of distribution of bonus funds be known also?

The answer will be given as YES in capital letters. First, let us consider the matter of bonus computation.

What advantage can there possibly be in secret figures as against the decided advantages to be obtained by working in the light? Savings sharing plans involve two main factors: first, the bogey to beat and the fund to arise when the bogey is beaten; second, the distribution of this fund. The setting of bogies, that is, the quotas of performance and the cost of these performances must be done *with* and to a considerable extent *by* the interested responsible key men. Then, as the game progresses, the actual performance placed against these bogies tells the story of success or failure. It posts the score of the great game, and the psychological effect of just this procedure is exactly what we want. Without it, no incentive plan has any force. Therefore, as the great force of incentives lies in a complete knowledge of what to beat and whether or not it is being beaten, there seems no doubt about the advisability of publicity.

But, it will be asked, why let them know what percentage of the savings will be set aside for a bonus fund? Because that is part of the game. It is the ultimate goal to reach, and therefore must be known. Besides, the withholding of such an important part of the scheme from the knowledge of the men suggests "cagey" dealing. It suggests a type of trading that has no place in square dealing.

The distribution of the bonus is another matter. Here we run into the old habits of secrecy regarding salaries. As to secret salaries, there always comes up the thought that someone is ashamed of something. *If salaries are set fairly and squarely, with good reason and sound premises, why keep them so secret?* If A gets \$10,000 and B \$8,000, and B ever finds it out, he may be peeved because he can say nothing. But if the chief said "B, you are getting \$8,000 while A is getting \$10,000 for such and such reasons," B could see why and work his head off to overcome his shortcomings.

So it is with point ratings for bonus distribution. The head of a department will get 100 points—let us call him A. B gets 80 points, C gets 60 and D gets 20. These points are set on the best possible judgment of A and his superior. B may get less salary than C and yet be more effective. This may often happen when C is older, has served many years and therefore has been raised in salary while B is a new man who has not yet reached the salary level of C. Admittedly C may be getting too much salary for his present job; but we all know that red-blooded companies are not trimming salaries in such cases of older employees. Yet B should get more of the bonus, as he is contributing more toward the savings worked out.

Why conceal such things? Why not have B and C know the exact truth? In fact, absolute knowledge of where one stands is in itself a powerful incentive to do more and better.

Different positions carry with them different types of men, and both the positions and the men may have a different angle on the matter of making savings or increasing profits. A treasurership requires a certain type of man—honest, steady and 100 per cent trustworthy. He need not, however, be a type such as a controller who is, or should be a very powerful element in profit increasing movement. On the theory that every man should have a salary commensurate with how the company desires him to live without worry or care, these two men may receive the same salary. But the controller should receive a greater share of savings or profits on account of the nature of his job and the man required.

It seems that there is every argument for publicity of all that enters into an incentive plan, both as to how bonus funds arise and the distribution thereof. Frankness promotes confidence; and after all, it's the whole "gang" working to the same end that brings the big results. No group can work to the same end without a clear knowledge of every element of the problem.

Bonuses and Company Stock or Any Other Specific Use of Bonus. If an individual has a responsibility placed upon him, has a definite goal to meet and beat, organizes his work effectively and beats this goal to the extent that a substantial bonus is earned, what then? Must he take any kind of forced feeding in respect to what he receives as a bonus?

The question is often asked as to the tying in of company stock with bonus plans. That is, should bonuses be payable wholly or in part in the stock of the company? Of course, the theory of that is to tie in each employee whereby he is a stockholder as well as a responsible key man.

Other than the matter of company stock, there also is the question as to whether or not any company should, in any manner, concern itself with what the key men and executives do with their bonus. That is, should any company attempt to be paternalistic in respect to the personal investments of the men who are operating the affairs of the company?

As to the stock feature, no two companies are alike. Some stocks are good; some are not. In some concerns where there has been stock manipulation, the water is dripping freely. In others the stock is sound and high in its intrinsic value. In some companies there is good backing for the stock on the market and in others none. Some stocks are listed on some exchange where there may be ready sale, and others not. Close corporations, where stock is held by families or groups and there is only the good nature of the group behind the stock present another situation. Some companies are old and their stock issues are quite fixed. Some are new and their stock issues may hit the public fancy. Companies in certain staple industries may present little chance of stock appreciation. Other companies may be in the class best illustrated by what General Motors was during its rise—a new industry with new developments by a new school of progressive management.

As to any other thrift, investment or other savings schemes, there is doubtless much to be said as to the need for busy men to have an avenue for counsel, at least, if desired, if not an actual means of investing whatever portion of their extra earnings they so desire. The 1929 break in the stock market is a shining example of the risks run by individuals in market operations. In fact, the movement of the present day as is evidenced by so-called living trusts, mingled trusts, and all such plans is along sound lines well worth the consideration of each one of us.

But the question is, to what extent should any company embody any plan whatever, particularly investment in its own stock, as to the disposition of bonuses earned in the incentive plan which it operates. Should there be even the slightest suggestion of pressure on the recipients of bonuses as to how they either receive their bonuses or how they shall use them after receiving them?

It seems quite reasonable to conclude that when men have expended supereffort in their work, have made records of accomplishment that have never been made before, have increased the profits of the company, and in all ways have "come through," the enjoyment of their extra remuneration should be protected from any paternalistic influence whatever. Even any advisory or honestly planned help should be conducted in a manner to guard absolutely against any feeling on the part of men that they are not playing the game if they do not choose to participate.

From the writer's personal experience he has known many exceedingly capable men who have been faithful, hard, and even zealous workers. They have reared families which are credits to even Rooseveltian ideas. But in doing this, the pocketbook has been strained to the limit to keep abreast

of all the expense incurred. There are no luxuries in such families. Then comes participation in a bonus. With regular salary budgeted to the limit for house and school expenses as has been the case for years, is it not a fact that the acquisition of something outside the strict line of necessities will usually produce a psychological reaction which will spur such men on to greater effort? In other words, "all work and no play makes Jack a dull boy." Therefore, a little relief from the round of absolute necessities makes life rosier, opens new and broader thoughts, and dislodges the mental cobwebs. This reaction, in turn, produces better effort, which brings more savings and more bonus.

After the craving for relief from the drudgery of working for necessities only has been appeased, then is the time to paint the picture of investments and provision for the future of these very families. But remember at all times that whatever a man earns by his wits and his efforts is *his*. While any company may well provide optional schemes whereby the future of its key men may be safeguarded, these schemes should be sold and not forced.

As for tying in key men, can any tie be stronger than a properly devised and carried out scheme whereby each one may profit by his own supereffort in accordance with a formula which safeguards the *company first* and then throws open the door for every key man to make what he will?

Conclusions. The intent has been to sell the idea of key men and executive incentives as what seems to be the greatest thing that has been taken up by management in years. No attempt has been made to tell how to work out such plans. Obviously that could not be done. Furthermore, it is useless to discuss how to work out any plans at all when the basic thoughts in respect to the major features of such plans are in a state of fog, a condition which may confidently be stated as the situation today. However, that is a normal condition, as every new development must necessarily go through its steps of evolution.

Conclusions suggested by the writer as a result of his own reasonings, at least, in respect to key men and executive incentives are:

1. Incentive methods are necessary to bring out supereffort and create a definite feeling of real proprietorship.
2. The preeminent forerunner of any kind of incentive plan is real, unalloyed, and effective leadership.
3. There must be a definite plan of organization with authorities clearly fixed and specified.
4. There must be adequate records to match the various responsibilities.
5. There must be standards of performance for every move in every department.
6. There must be a profit-sharing scheme which provides for a normal return to stockholders for their net invested capital, with a specified percentage of remainder profits to form a profit-sharing fund.
7. The percentage of remainder profits may best be a sliding percentage, increasing in size as profits increase.
8. Highest executives derive their entire incentives from the share of profits set aside as a bonus fund.

9. Executives just under highest should derive their incentives partly from the overall profits and partly from the "savings" in their own departmental activities.

10. All key men other than those mentioned should derive their incentives from bonus funds created by setting aside a portion of savings made by bettering fixed performances.

11. Savings as regarded in this discussion means the betterment of the relative performance of units of results produced to allowed expense for so doing. It does not mean simply absolute savings of money.

12. Distribution of incentive funds should be on a rating of effectiveness in current results, and not be entirely or even partly, sometimes, in ratio to salaries.

13. Everyone should have an adequate salary entirely without regard to any incentive plan.

14. The manner of setting up all funds, profit sharing, and savings sharing should be known to the participants.

15. The rating of each participant in each fund should be known to the other participants.

16. Only half of the bonus earned should be paid in cash during a calendar year, the balance going to a reserve fund against which all losses shall be charged and distributed at close of year to all participants on the basis of their value one to another in the department as a whole.

17. The rating of all participants as to their value to the organization as a whole, the basis on which the annual reserve is distributed, insures a team work between departmental subdivisions.

18. Except in very outstanding cases, any forced investment in or distribution of company stock as a bonus is to be avoided.

19. Bonuses should be paid to everyone with no paternalistic string attached thereto—or even a suggestion of such a thing.

20. A company may provide optional investment plans for its men if such are not impressed as an expected route for everyone to follow.

21. The whole secret of an incentive plan lies in its psychological effect.

With this twenty-first conclusion, let us close the case. As has been previously stated, any business where men are on salaries only, requires more than a normal employee spirit. To succeed today in maintaining even normal profits, intense attention and effort is necessary.

To make profits greater than normal, a supereffort is necessary. Super-effort must be induced by supertreatment for the key men involved—and why not? War medals are awarded for performance *beyond* that normally expected of a soldier. So it is with incentives. A salary should be paid giving adequate return for normal service and normal results. Such performance should be definitely set up in the form of quotas, budgets and standards of all sorts.

Then, when these normal results are exceeded, every key man and executive should automatically—not paternalistically—receive his reward. Such procedure intensifies responsibility, stimulates effort, makes big men bigger and rolls up a net profit which otherwise would be unknown.

CHAPTER VI

EXECUTIVE LEADERSHIP

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It is the purpose of this section to discuss the relation of executive work to the task of leadership; to clarify a conception of leadership which is sound psychologically; to consider how leadership in economic life can be cultivated both in amount and quality; in a word to consider the hows and whys of the technique of executive leadership.

The Nature of Executive Work. The way in which executive and directive work is viewed both by those who practice it and by those interested in building up a science of management, has been changing in recent years. Notions of absolute managerial authority, strict and unquestioning employee obedience, arbitrary imposing of managerial fiat—the whole older military idea of the relation of the commander to those commanded—these are being superceded, and for various reasons. In the first place, this kind of relationship is found not to work well in a democratic community. It does not work well because people are today less disposed to be governed by their fears than by their desires; because they know better what they want and how to get it; because they have been taught self-respect and ideas of equality. A spirit is abroad in the modern world which makes bossism increasingly offensive to those who are bossed.

A second reason is that the influence of modern psychology on managerial thinking has increasingly helped to show that leading and not bossing, training and not scolding, inspiring and not threatening are the sounder ways to appeal to human nature.

It should therefore be possible—and there is experience to prove that it is—to help the managerial personnel of business and industry to work consciously to throw off the older notions of bossism and to cultivate another and more effective attitude toward directive relations—one which is in harmony with these undercurrents of popular sentiment in the present world and with the best finding of modern psychology about the nature of people and the way in which they are summoned into action.

Power Resides in the Function, Not in the Person. But first, certain introductory observations should be made as to the true character of executive or directive work. There are directive positions and functions in all organizations. The director of men—be he factory manager, department head, foreman, department store buyer, or office manager—directs primarily by virtue of his position and not of his person.¹ The directing and leading

¹ "Scientific Management in American Industry," Taylor Society.

responsibilities inhere in the job or function. The total situation in which director and directed find themselves has this impersonal aspect. And it is important to the building up of a healthy notion of leadership that this idea of the inherent and functional nature of direction—as contrasted with its personal aspects—be kept in mind. Personal supervision of others is not a height achieved by a few born leaders. It is an inevitably and widely experienced part of the whole managerial job. And the director who thinks his power over others resides fundamentally in his person rather than in his function does not approach his work with a sound mental attitude. He is in danger of claiming too much for himself and of demanding too much of others. He is in danger of being too egotistic, too arbitrary, too proud of his place and his powers.

Indeed, because his position carries directive functions implicitly in it, the "orders" that he has to give should be at a minimum. Most of the routine "instructions" as to work should not have to be orders at all, should be the natural explanation and overseeing of individual responsibilities all down the line, should call for help in facilitating performance rather than for commands of a bossing character. If a working group is as well organized in its relations as good scientific management entails, the directive problem should in reality take on leadership attributes as its major characteristic.

One special reason why it is useful to emphasize this important point at the outset is that in business the director of men is not usually selected by those he directs. A group of workers finds someone "over" them to whom they are expected to look not only for "orders" but for inspiration to partake in common efforts for an objective which certainly at the outset they do not have too clearly in mind and for which their support should be consciously secured. In some other forms of human organized activity the directing head is, at least supposedly, the chosen from among his constituency. This fact gives real force to his ability to know what they desire and to his ability to summon everyone to devoted following of the group's objectives. The group-appointed leader would seem to have—at least in certain fields—a psychological advantage in rallying his following for achievement. He leads because leadership is expected and desired of him. This advantage is scarcely present in industry as yet; and therefore the directive head must be at pains to overcome the subtle mental resistance which may well arise between a force and the manager who is not selected by them and is not responsible to them.

Another way in which this characteristic of leadership has been stated is to say that leadership is a function of the relationship, not a personal right. This is not the only or final word on its nature. But it is a conception which introduces a helpful corrective to a too highly personalized view and which is a helpful stimulus to the systematic cultivation of leadership qualities among the thousands who must perforce exercise leadership functions.

THE NATURE OF LEADERSHIP

Just as the conception of executive work is changing, so also the conception of leadership is broadening. There are, of course, different kinds of leader-

ship. But we are here concerned with executive leadership as that is manifested in business organizations both in face-to-face relations of rank and file and foreman, of foremen and superintendents, of superintendents and their company heads, and secondly as it appears between the top executive officers and the whole organization in leading them to the adoption, interpretation and execution of corporate policies.

In the face-to-face type of leadership the personal characteristics of the leader of course assume greater relative importance. In the latter type the elements of intellectual planning and managerial imagination are more needed and come prior to the necessary personal contacts implied in conveying new corporate plans and purposes to the membership and in the detailed supervision of carrying them out.

One aspect of the nature of leadership disclosed by a wide examination of leaders in action reveals the common factor of the pleasure and satisfaction found by those led in following the leader. Fundamentally in all human affairs, political, military, religious, etc., the leader is summoning those who are able to find their own good in the aims the leader holds and works for. The loyalty displayed by the led may often have been mistaken. There have been false leaders with trivial or stupid aims. The elements of personal "magnetism" or domineering personality may have been too much in the ascendant. But fundamentally the people had to be served. They follow where they think it is worth their while to be led. There are, indeed, these two phases always closely interwoven. The leader is to a certain extent opening up new visions of what will appear as good and worthwhile from the point of view of his constituents. And he is also, if he is successful, voicing and making articulate those objectives of which the led have but have not yet become clearly aware. The good leader in the larger sense is both a seer and a mouthpiece.

Newer View of Leadership. One difference between the older and the newer view of leadership centers about the point as to what parts of people's natures are being appealed to by the leader. Here is where the modern conception of human nature has wrought an important change. It says that the positive and not the negative elements of human nature are the stronger ones—hope rather than fear, self-assertion rather than submissiveness, constructiveness rather than destructiveness, love rather than hate, security rather than uncertainty, growth rather than stultification. It is the creative, emerging, developmental quality of human nature which is now realized to be the more dominant, the more permanent, the sounder element in personality to build upon, and which therefore must be appealed to in summoning people to action.

Hence modern leadership is to be defined¹ as the ability derived from that combination of qualities by means of which one gets other people to work with him toward some goal because they find that they want to help him to realize it. Both together find the effort toward their common objective satisfying. As desire has been said to be "the soul of will," so also is it the soul of leader-

¹ See TEAD, ORDWAY, "Human Nature and Management," Chap. XII, where leadership is defined more exhaustively in relation to economic affairs.

ship. The leader today is he who gets things done because the led come to want to do it. He establishes a creative relationship in which desires become integrated or harmonized by efforts toward specified ends.

Here is a definition of leadership which at first sight seems to reverse the usual view of the matter by centering attention on those being led and on what they want and can be brought to want. Again, this is not the last word on the subject. But the emphasis on the led rather than on the leader is deliberate and is essential to a profound view of the whole relationship and its successful functioning. The reasons for this emphasis require further statement.

Objects in View Must Be Satisfying. Those being led must sooner or later find the object being worked for desirable and satisfying to them. Only so does the effort continue to grow out of self-propulsive and self-generating motives. Self-expression, a sense of registering in action, the feeling of zest in life's activity is a profound demand in each personal life. And it is satisfied in ways that are in one sense unique for each of us and in another sense common to all of us. The good leader is able to gather to his cause the self-expressive drives of his group because he knows how that self-expression comes to pass. It comes to pass, in a word, through the release and outlet of the creative parts of people's natures. *We are because we do.* And we do what we think yields for us a sense, however momentary, of power exercised and mastery assured. To lead well is to call to the aid of the leader's cause these yearnings for self-realization that normally impel the led and which only need imaginative direction into cooperative rather than purely individual channels, to enable successful group achievement to take place.

In short, the good leader is both spokesman or articulator of normal human demands upon life, and he is one able to see from his vantage point newer reaches of effort in which he and those led will discover unexperienced outlets of self-realization, self-growth, and associated power. Put in another way the good leader not only espouses purposes commendable to the led but with the led he helps to create new and better purposes through his knowledge of human nature, his unshaken faith in its creative attributes, his persistent reflective effort upon new ways and means to realize finer and fuller purposes.

Let no one think that this is mere rhetoric because it is stated in general terms. The department foreman who can bring a couple of score of individuals with their own special interests and desires into a sense of group purpose and effort to cut costs, improve quality, create a friendly atmosphere of cooperative effort, is a true leader of a much needed sort. He is enabling his group to experience the satisfying truth that in group efforts from which each personally benefits in status, approval, pecuniary reward, opportunity for advancement, etc., they are genuinely realizing themselves. The things they want of life can in a measure be secured in and through their common and associated exertions—that is, they can unless the leader's efforts and aims are exploitive and selfish and the benefits and results are not being shared with his following.

Corporate Purposes Must Be Sound. Then, when the foreman and his men have measurably succeeded in building an effective departmental group they still have together the task of integrating their group activity

with that of other departments till an entire corporate group sense is realized. This is a new and larger purpose growing out of success in realizing the primary one. And when that is seen to be the necessary next enlargement of aim, there arise considerations affecting alike the foremen, the rank and file, and the heads of the organization, as to the soundness of the objectives of the corporation as a whole to which loyalty is being summoned. Are they such as to inspire confidence among all the members, so that each worker in finding his own self-expression at work is also finding the corporate purpose realized? Or to put it in another way, must not the things the corporation sets itself to do be of such a character that in the striving for them each one in the entire group finds his own self at once protected and enlarged, and caught up into awareness of a larger self?

There are enough examples today of corporations pursuing different sorts of objectives to supply definite evidence as to where and how employees are brought into effective and harmonious working attitudes. And broadly speaking the companies which show this newer leadership successfully in action are those that have taken account of the basic desires of all of us—have made livelihood reasonably secure, have offset the fears of sickness, accident, old age, and death; have provided for training and promotion; have organized approval and incentives to better work and to creative suggestions; have been proud of the quality of their product and of the fact that it is economically distributed and reasonably priced. It is not without interest that a number of public service companies, where relations with consumers are in a measure controlled by legislative and regulative provisions, have found themselves in a peculiarly advantageous position from this point of view of being able to summon their employees to a worthy purpose. In such cases profiteering is presumably absent since the rate of profit is regulated; the service demands and responsibilities to the public are clear and direct; the appealing quality of the corporate purposes is limited only by the insight and progressive character of the corporate leaders themselves in interpreting them.

Under conditions like these the supporting situation under which good leadership can manifest itself is uniquely present. The whole psychological setting is of a character to predispose people to find part of their own self-realization in an intelligent pursuit of the corporate objectives. Good leadership has in such cases harmonized to a degree the personal aims and group aims—not by a process of compromise or subordination of personal desires but by a sounder, more liberating policy of assuring that each person as a person and the members together in a corporate sense live more fully in and through the progress of their associated labor.

Profits Alone Too Narrow an Objective. The loyalty of the led is, in short, conditioned upon the soundness and breadth of the objectives of the leaders. Corporations which are mindful only of profits to stockholders, which give no specific thought to employee well-being, can hardly expect to rally workers for long under a leadership that will thrill and grip. The companies where leadership works are those in which the ends sought are broader than money profits, and definitely envisage human satisfactions for the members of the corporate group in and through work. Get right with your purposes—

becomes an essential dictum for the good leader. And that means having purposes of such a character that there is a reasonable presumption that normal people will find some real part of their life realization in throwing in their lot eagerly and unreservedly with the corporate project.

Too often today the worker gives what he thinks he is paid for and nothing more. His working attitude is perfunctory, grudging, indifferent, or qualified in such a manner that no whole-hearted effort is forthcoming. Which is precisely what we should expect. It is really a tribute to human nature that in a purely wage relationship arrived at by rather arbitrary bargaining, people give as unstintingly of their effort as they do.

If this be thought a hard doctrine, one can only say that all the earlier experience along the old roads of employer-employee relations has led us nowhere. Essentially it has failed. Yet our machine civilization is relatively so young that the first dictate of wisdom is to realize that it is and should be in transition. As to what may be the forms and method of industrial government a half century hence, we do not have to be concerned. But it is of value to understand that the type of absentee-owned corporation trying to make unlimited dividends, or of closely owned family company, or even of bureaucratically run public institution or government department is *not* the type that promises to have survival value from this vital point of view of its ability to summon the best loyalty or to call into action the finest leadership. Our economic and political organizations have sooner or later to be set up in such fashion that they can expect through their leaders to call out the self-realizing efforts of the generality of mankind in what will be new and wholly unsuspected ways.¹

Good leadership, in a word, cannot in action be divorced from good purposes, from objectives which are psychologically as well as economically defensible. Good leadership commands loyalty not to a glamorous personality or to a hypnotic egotism. It gets its best expression only in a total corporate situation where human ends are in view and human satisfactions are by way of being realized.

The Leader's Personal Qualities

It is of value to speak briefly of those qualities of the executive himself that heighten his value as a leader. For such an analysis, however lacking in precision it can be at this stage of psychological knowledge, does at least show certain qualities which are capable of training. It is repeated often that leaders are born and not made. But this is not true. No doubt some are born better leaders than others. But everyone called upon to assume a position of executive leadership can by taking thought improve his own personal effectiveness.

Some of the important qualities which experience show to be requisite are: a bountiful endowment of physical and nervous energy, some technical knowledge of the function at hand, a better than average intelligence or

¹ See TEAD, ORDWAY, "Human Nature and Management," Chap. XIX. Also Tead and Metcalf, "Personnel Administration, Its Principles and Practice," Chap. XXXIV.

mental alertness, constructive imagination, knowledge of human nature, enthusiasm for the project in hand, some teaching ability with which goes a realistic time sense about the rate of change in people's habits and outlook, a sense of humor, self-confidence, and finally an underlying attitude of concern and friendly feeling for those being led.

Conscious Improvement Possible. From this list there are certain characteristics which by taking thought a person can alter. Up to a point physical and nervous energy can be augmented. Imagination can be aided by conscious attention to the process of reasoning and the conditions which minister to it. Knowledge of human nature can be improved by formal study and by experience. Enthusiasm can be developed if and when the purposes in hand become through conviction and feeling more and more fully one's very own. Teaching ability can be improved through conscious attention to methods of pedagogy as scientifically known today. Self-confidence can be improved in various ways depending on the particular source of the feeling of inferiority. A friendly and even deeply affectionate feeling for people can be developed.

This last is profoundly important—indeed it goes to the center of the problem since it peculiarly involves the individual's attitude toward life and to mankind as a whole. A good leader cannot be at heart a cynic, distrust people basically, or be fundamentally convinced that life's values are illusory. Of first importance is this faith he should have in the essential soundness of human nature and its capacity for development. For it is this he appeals to and builds upon. It cannot be too often emphasized that at his best the leader is not carrying on any subtle form of hypnosis. He is helping people to know themselves, to realize themselves, to work in a cooperative relationship, to find satisfaction in the whole project to which he as leader is committed and to which he seeks allegiance. To this end he must know himself, command himself, conduct his own inner life in wholesome ways, place value upon those elements which tend to make life better for himself and for others. All of which implies psychologically that his attitude toward people is friendly, kindly, tolerant, and confident of constructive and creative responses.

For this reason it is important to consider next some of the special problems of the leader in relation to his own inner life—problems of attitude, outlook, and mental habit, which help to make or mar the basic soundness of his human relationships. There should exist in his mental make-up no quirks which prevent his being sensitive to other peoples' natures, needs, aspirations, and struggles. Using the popular parlance of the day, he must not be too introverted—too preoccupied with his own personal adjustment to living.

The Leader's Personality¹

Effect of Inferiority Feelings. Feelings of inferiority in the leader are met with sufficient frequency among executives so that it becomes important to know what they mean and to what consequences they lead. For such

¹ For fuller development of this topic see Hart, Bernard, "The Psychology of Insanity"; V. V. Anderson, "Psychiatry in Industry"; Ordway Tead, "Human Nature and Management," Chap. IX.

feelings are almost sure to seek expression in ways that lessen his effectiveness. This is particularly true because so many executives today rise from the ranks and an inferiority sense is likely to develop. The self-made leader may come to a too serious feeling of his shortcomings due to a sense of inadequate education, of racial differences, of physical handicaps or of social distinctions which make him feel he does not "belong." And the tendency is strong in human nature where any such inferiority feeling becomes acute to compensate for it, to try to offset it by protective or defensive behavior of an exaggerated sort. The very short man for instance may shout, bully, and "talk big." The executive who is racially different from his associates or socially unacknowledged may either be too ingratiating or too insistent and arbitrary in personal dealings.

The possible sources of such feelings are numerous. One foreman may be compensating in his blustering attitude for having a wife who bosses him at home. Another may suffer the mental pangs of having been a youngest child at home and therefore having been "babied." And an only child may become a spoiled, vain, arbitrary executive. The son of a bullying father may display characteristics of too great timidity and submissiveness. These are only suggestions as to the kinds of personality problems to be met in dealing with people. And it is tremendously important that men who are to direct others should themselves be free of such mental disabilities so far as is humanly possible. Everyone who has the task of choosing and training leaders should be particularly concerned with the role that mental hygiene can play in helping to identify and to correct fixations and any bad mental habits and attitudes which individual executives may possess.

Freedom from inhibiting fears is an aspect of this problem which should be explicitly mentioned. Executive leaders need self-confidence and self-possession. If they are afraid of those above them or of those below them, they cannot do their best work. Respect and consideration for others are necessary attributes but they are entirely different from fears, both in emotional and in intellectual content. The leader who is afraid works under severe handicaps. His fears will sooner or later be found out and be worked upon to the detriment of all concerned. A poison is at work within him which eventually kills the other qualities essential to challenging the best in others.

The "Will to Power." What has been called the will to power is another tendency which may develop in an executive leader. By this is meant a love of exercising power for its own sake, a love of extending one's power unduly and for self-glorification. This is a subtle danger to which we are all exposed and it is something to watch for and check when evidences of it appear. The fruits of such an attitude are vanity, a desire to have one's own way in little things and to interfere in the carrying out of details, impatience with the mental limitations of others. The whole essence of true leadership qualities is so far removed from this craving for power over others that too much attention can scarcely be paid by supervisors of executive training to putting the emphasis upon *the educational role* of the leader as contrasted with the power role.

One manifestation of the will to power which is occasionally met is the disposition of a domineering executive to surround himself with men who do

not dare to or will not oppose him. The phrase, "*yes-man*," happily describes the type of individual who is likely to be found in organizations characterized by a one-man domination. The bad features of such a situation should be obvious. There is no frank critical consideration of problems on their merits; there is no development of the minds of the yes-men; there is a continuous further feeding of the vanity of the "chief"; and when for any reason he is removed the elements of sound organizations are all too likely to be found absent. The whole point of good leadership is to have the critical and creative experience of problem solving go forward continuously as a shared activity. Only in the pooling of ideas and in the building up of policies and methods by drawing on good ideas from all concerned, does the work of leadership show its best creative attribute. The will to power forgets all this and overrides the ideas of others without thought of assimilating and using them.

The good leader is, of course, not without personal power. His ability to influence is often greater than average. But the power comes through merit demonstrated, through general acknowledgment of abilities that command not only respect but affectionate devotion. The good leader *earns* his right to be powerful; and the power he manifests is not arbitrary and self-centered but grows out of his effort to build cooperatively. *He creates power by creating group consciousness and group morale.*

Leader's Idea of Himself. In a related connection mention should be made of the "personality image" which each of us carries of himself deep in his own inner consciousness and in relation to which one interprets and registers oneself in action. "What is my idea of what I really am?" is a question everyone should occasionally put to himself in the effort to be realistic, that is to say, to have one's mental image of oneself in close correspondence with what one really is. The executive with the "Napoleonic complex," for example, fancies himself like the great general and almost unconsciously tries to act like him with unfortunate results. The injunction to "know thyself" is not an easy one to obey but in relation to the executive's effectiveness in action it is a counsel of wisdom second only to which is the exhortation to "be thyself."

The Tendency to "Sadism." A further all but unconscious characteristic to be occasionally identified is what is called a sadistic tendency, by which is meant a desire to inflict pain on others as a source of satisfaction to oneself. This is a specially unfortunate trait for an executive to possess but it is one likely to show itself in the case of a man who has had a hard struggle to advance. "I've had to struggle for everything I have, so why try to make it easier for others. Let them go through the same fight I did." This sentiment is one widely held but it is unsound in essence. It is devoid of the educational outlook since it leaves the training and developing of others to chance. Hardship and struggle for self-mastery and progress are generally sufficiently present, and the man who is disposed to be a "hard master" is erring on the side of severity.

The more modern attitude is that everyone has to struggle with his own personal resources to make of them what he can and should. And the role of the executive leader is to facilitate the process of self-mastery and growth in

personal power by making the working setting of each of his group as much an educational setting as possible. It is one thing to "go through the mill" alone, unguided, determined and self-absorbed. It is another thing to find one's working associations made a conscious training process for the calling out of as much ability as a man actually has. Sometimes with this willingness to let others suffer for their own good goes a positive tendency to show power by inflicting pain. Some executives "pick on" people unnecessarily, or bully them, or keep them in a state of anxiety about losing their jobs. And all of these are expressions of a sadistic tendency which is thoroughly vicious.

The "Rationalizing" Tendency. The rationalizing tendency is another that should be consciously identified. We rationalize when we try to give acceptable reasons for acts which were done impulsively and for motives which we may be ashamed to admit to ourselves or others, or when we try to find plausible reasons for doing something we want to do but do not really believe in. A department head, for example, may find it easy to convince himself that one of his staff who is getting on in years is a poor worker, or insubordinate, or deficient in some respect. He makes this the reason for discharging him rather than have to face the problem of pensioning him a few years. The rationalizing process is so universal and it is often so hard to reason problems through to a truly sound conclusion, that a particularly insidious habit is here confronted. It has variations which are almost infinite in range. For example, among a group of executives one may differ from his associates on some matter of policy but he may convince himself that he agrees with them because he knows it will be safer for him to agree. The reason why it is important to consider this defense tendency is in order that the wise executive leader may be on his guard against rationalizing and may try to encourage honest and clear reasoning that will solve problems on their merits and disinterestedly.

"Grouches" and Irritability. Other more obvious forms of personality disturbance that constitute real handicaps to persons in leadership positions are moodiness, grouches, quick temper and irritableness. The origins of these may be difficult to trace in the individual case but they are not without definite causes which are to some extent removable. These conditions may derive from fatigue, from poor physical condition of stomach, liver, bowels, glandular activities, and the like. They may come from personal worries and anxieties preying upon the individual, from some unrealized "repressions" or "complexes." They are definitely a symptom of internal distress and should be viewed as such. They are frequently met but they are not normal. And every effort should be made by the individual himself and by others to help him, as we say, to "snap out of it." The therapy for these conditions cannot be gone into here but it is well known and available.

Leader Must Face Reality. The recurring note of this entire discussion of personality maladjustments is the importance of a realistic confronting of the facts about the sources and results of mental difficulties. An honest confrontation of reality is the first objective in all matters of personality adjustment and growth. The realities with which the leader is concerned relate first to the causes in his past experience of his own underlying attitudes

and mental predispositions, and second to the complex pattern of unadjusted human motives with which he has to deal in handling his staff.

On the first point, we are gradually coming to better knowledge of how to recognize failures to confront reality. In regard to less acute manifestations every one of us can be a mental hygienist for himself and for others. In its more acute phases it may be necessary to have recourse to the service of a trained psychiatrist. And it certainly has become one of the demands increasingly being made upon leaders and trainers of leaders that they know when mental quirks and abnormalities are present, sense how profound and dangerous to the person or the organization they may be, and be able to help individuals toward wholesome readjustment.

To be sure, the acknowledgment of the facts, candor, and insight in the presence of reality—this is only half the story. There must also come the deliberate process of what is usually spoken of as *reeducation*. The individual who stands confessed of mental maladjustments can be helped to see why he feels or acts as he does, why the maladjustment is unsatisfactory for him and for others, and how by conscious efforts he may establish new habit patterns in a new realistic relation to his whole environment. He can make fresh continuous contact with life which will give him a satisfactory adjustment. There is every reason to hope that a wider knowledge of mental hygiene and modern psychiatry among executive leaders both can and will come to pass and will bring with it a much happier internal personal life and much more amiable personal relations with others in business and elsewhere.

Leader Must Know His People. On the other point of the leader's realistic knowledge of what goes on in the minds of those he leads, it should be a matter of conscious intention and planning that every leader keep himself close to his people. He must have what William James so well called "the pungent sense of effective reality." Every device of office prestige, of pride of place, or inaccessibility, of lack of time to come close to people, which lessens this possibility is to be discouraged. It is possible and essential to know the temper of an organization and to know it intimately. And it is an end which can be achieved by a right personal attitude on the leader's part, without resort to informers or undercover methods of any sort. The good leader invites frank comment; he can be trusted by his people to sense difficulties and maladjustments, not in order to reprimand but in order to help others and to help himself to provide conditions in the organization and attitudes in its personnel which are more and more consistent with sound and harmonious operation.

This leads us, then, to a more detailed discussion of the relations of the leader to the led. The methods of his dealing with them must be studied. Better ways can be discovered and learned. The technique of the leadership relation has already been vastly improved in specific cases and it is now possible by training in example and practice to help every leader in this respect. The evidence of recent studies points conclusively to the fact that one of the most controlling factors in determining the happiness of the relations of the rank and file to the whole corporate project lies in the manner and tone of personal dealings between workers and their immediate supervisors. The

support which these studies give to the case for intensive work in leadership training has proved substantial.

THE LEADER'S RELATIONS TO THE LED

Leader Must Make Himself Understood. Perhaps of foremost importance in getting and keeping the relation of the leader to the led on a sound basis is his recognition of the necessity of clear communication and full understanding of the leader's purposes and wishes.¹ The leader must make himself understood. This implies clarity and simplicity of verbal expression. His vocabulary must be one that can be grasped; his enunciation must be clear; he must be sure that orders or ideas are correctly grasped. It is necessary to realize that words are the direct means for interchanging ideas; and words may mean different things to different people. From the point of view of employee reaction, the leader must not only speak in the employees' idiom but he must get at what his subordinates are trying to say, rather than pick them up on what they literally say.

Instructions should be explicit. If the leader is allowing those under him to work out the details of executing instructions, that also should be clearly understood. And other things being equal some latitude for personal judgment and choice in such execution is a good educational policy. Also instructions should usually be issued one at a time and not all at once.

Where the problem of communication relates to more general ideas and policies so that no question of giving personal orders is involved, the conveying of ideas is an even more difficult matter and deserves the most careful thought.

Assuring employee understanding of instructions has another aspect that relates to the time factor. A leader may himself devote much time to grasping the issues of a problem, and have thought it through or worked it through carefully for himself. Then when he comes to present it to his group the temptation is to be annoyed or impatient if they do not at once realize what he is driving at and agree with it. This is too much to expect. People do not come to understanding and to agreement with new proposals quickly. They too must go through the process of coming to understanding in much the same way and with much the same time allowance that the leader found necessary for himself.

Modern "Orders" Are Instructions. The new notion of the relation of leader to follower is not comprehended in the old idea that "orders are orders," that it is "theirs not to reason why." The new conception implies the maximum of understanding and mental grasp by all concerned as a basis of agreement and intelligent cooperation. It recognizes that action which is to be sustained, wisely directed and effectively carried through depends upon knowledge as much as upon enthusiasm. Sullen, dumb, submissive acquiescence is a bovine reaction at the pole farthest removed from the quality of the reaction the leader is seeking from his people. His effort depends upon a realization that the true springs of action are creative, self-sustaining and

¹ ANDREWS, L. C., "Manpower."

self-propelling in their essence. And they are of such a character only when people understand what they are doing.

Orders should always be given in a calm tone of voice. The tone of voice employed by the leader in all his contacts is of the utmost importance. He should try to pitch his voice low, avoid sounding querulous or peevish, and avoid using a sarcastic or ironic tone of voice. Sarcasm is a dangerous weapon in the leader's hands. And so is anger. The executive who has to resort to a show of temper to impress his men or to get things done is on the wrong track in his personal relations. Support and loyalty are to be won by fairness, firmness, clarity, a demonstration of competence, patience, and cheerfulness. These positive qualities secure the positive response.

Correction of faults or errors is an educational opportunity—not a chance for an emotional orgy on the leader's part. "Bawling out" has little place; and efforts at correction should usually be made privately, quietly, with the emphasis upon finding out how the difficulty can be prevented from happening again. Hence swearing at workers and using unduly strong language are an open admission that the real leadership relation is not present, that the attitude of the supervisor is wrong.

Favoritism in the handling of people is a fault to be severely avoided; nothing breeds greater disruption in the morale of a group, and the smaller the group the more obvious and fatal this can be. Merit alone should be seen to be the basis on which advancement comes.

Increasingly the importance of *good manners, courtesy, and cheerfulness of bearing* is being realized and insisted upon among executives. And the executive who appreciates the leadership aspects of his task will voluntarily fall into an attitude which implies these things. For the presence of these attributes shows both that the leader is in command of himself and that he has the necessary regard for the self-respect of those he deals with. They show that he realizes that they too are persons in their own right whose personalities are to be respected as of equal worth with his own.

Importance of Appreciation of Good Work. Another serious need in the leadership attitude is a willingness to show approval and offer commendation where it is merited. Appreciation of good work, if discreetly manifested, is one of the most important of the leader's assets. For there has been far too little of it in business although it is a positive and creative force of unexampled power. The yearning for approval from one's leaders and one's associates is assuredly one of the strongest traits in human nature; and every good leader is at pains to organize the expression of approval in definite and appealing ways. In fact techniques have been developed on this point which will repay more extensive study (see, for example, the writings of Robert B. Wolf and Whiting Williams).¹

In this connection it is important to be sure that credit is given where credit is due. Some executives tend to want all the credit and the praise, and seem afraid to allow any for their subordinates. They have been called "credit hogs." But it should be obvious from what has been said that the

¹ See bibliography at end of Chap. XIV, Tead and Metcalf, "Personnel Administration."

leader, who is niggardly of approval and selfish or dishonest in claiming credit for the good ideas of his group, is using basically unsound tactics. He quickly loses the confidence of his men and finds that new suggestions are no longer likely to be brought forward. Instead of inspiring his men he is inhibiting them.

Attitude of Friendliness. It was suggested above that the underlying attitude of the leader in relation to the led must be one of friendly regard. It is important to underscore this point. The friendly attitude is fundamentally the influencing attitude. Those whom we regard highly we try to be like. We are at ease in their presence; we understand their wishes and realize how they can be pleased. We become more sympathetic, more understanding, more discerning when we are friendly. The need for intelligence and discrimination is no less but to them is added an emotional quality which is like sun to the unfolding of flowers. This is not to be confused with an attitude of undue familiarity or of sloppy sentimentality. The essential friendliness that goes with the successful leadership relation implies rather a respect for personality, a realization that people have a right to preserve their personal integrity, that they become most fully effective working members of a group where the leader is sufficiently their friend to respect them as persons and call out the best that is in them. The good leader, in short, is a good friend to his following in the profound sense of rallying them to a genuine measure of their own best self-expression through participating in the activity of his group. He thus inspires confidence; he becomes more sensitive to personal maladjustments; he is able with them to meet emergencies better.

Finally, the right leader attitude implies a *good teaching sense*. Three aspects of this matter merit brief consideration. First, one should understand what the teaching process and the learning process are. Second, one should especially realize how to put people through learning experience. And third, the educational uses of conflict should be understood.

THE TRAINING EMPHASIS IN LEADERSHIP

The learning process requires that people come into effective command of some ability to do or be or appreciate something previously outside their experience.¹ It is the assimilation of a new skill, using the word skill in its broadest sense.

Learning by Doing. "Learning is learning to use." "The one who is doing the learning must do the learning." "No one ever told anyone anything." The truth that these statements are trying to convey is that only as the individual himself has gained motor and mental facility in a particular direction has learning truly taken place. The test of successful learning is ability to cope with the situation at hand. All the reading in the world does not make a good automobile driver, nor a good conference chairman, nor a good department leader. Reading can give hints and suggestions for use when one is in action. But one learns these skills by working at them. Skills are the result of an interplay of person (mind, muscle, etc.) and of surrounding

¹, ORDWAY, "Human Nature and Management," Chap. VI, .

environment or materials or situation. People do not learn in a vacuum. They learn because in dealing with persons, things or situations something necessarily happens inside themselves. And learning is always dependent upon these two factors, the outer and the inner, working together. The process can be forwarded by helping to control either aspect—the person or the environment. And much time and labor can be economized if proper attention is given to building up learning situations.

This is one of the tasks of the teacher or of the leader in his role as teacher. *He can help people to go through experiences out of which they are likely to acquire new learning.* Also he can inspire them to take the time and the effort necessary to learn. He can direct them to sources of suggestions and ideas that will throw light on the situations they confront. In a word he can help to shorten the learning process by directing it, by saving it from being wholly a clumsy groping of trial and error, by stimulating the use of reasoning as a substitute for and critic of motor experiments.

It is only possible here to suggest how much of educational psychology can be carried over for use by the executive leader. But the underlying emphasis can be given by saying that the leader as teacher is trying to guide and direct the experiences of his following in such ways that they will learn and grow as a result of them. People do not learn by being told or shown or preached at or lectured. They may sometimes secure a new idea or new inspiration in these ways. But until the ideas or inspirations have in some way vitalized the person's life and enabled him to cope with new situations in more competent ways, they have not been truly incorporated into that person's being—they have not been fully learned.

It is not necessary to dwell on this truth as it applies to the learning of the obviously motor skills. A machine operator of any kind is usually taught to run a machine in an approximately sound way. But when it comes to matters of attitude or of corporate policies or of skill in personal dealings and the like, leaders are apt to forget that people must do their own learning and that telling them of new policies does not mean that they have learned them, that telling a foreman to "handle his people in accordance with the company's personnel policies" does not at all assure that he will or can.

Learning takes time; it requires the active sharing of experience by the learner. Problems which he faces and realizes are the greatest stimulus to his wanting to learn. *Putting learners in situations which entail problem solving is one of the quickest ways to encourage learning; success in the process is measured only by the acquiring of proficiency.* Verbal glibness is not learning although it is often mistaken for it. Ability to verbalize or talk accurately about experience is itself a useful skill because upon it accurate communication depends. But in matters of business policy and practice talk has so often been a substitute for action and good intentions for good methods, that emphasis is necessary upon the fact that learning and knowing involve ability to objectify words into living experience.

A concrete example of the kind of situation found in industry where true learning is important is that of a department foreman charged with the job of enrolling his men for a contributory group insurance plan. Here the difference between learning about and learning, between information and

willingness to act, clearly emerges. And the tendency is for the important task of making the employees really understand and wish to participate in the insurance plan, to be slighted. The foreman may hold a department meeting, tell about the plan, and then act on the assumption that of course the men want it and try to sign them up on the spot. The fact that the proposal is of unquestioned benefit to the workers is no excuse for this summary kind of procedure. It is rather all the more reason for a painstaking method of instruction which will enable the workers and their families truly to appreciate what a good idea the insurance is and to realize the company is thinking about their welfare and trying to work with them to advance it.

This, then, is the second big item in the leader's grasp of training technique. He puts people through learning experiences. He poses problems which they must solve themselves in order to come to better terms with surrounding conditions. Take, for example, the not unusual situation of an organization head who wants to centralize hiring and other personnel activities but wants the foreman and department heads heartily with him in the effort. It is of comparatively little value merely to tell them what he wants and plans today. What he must do is to get them to want to try it. Suppose, therefore, he places more production responsibility upon them, expects more in output or quality or lowered cost. Then he says that to economize their time he is going to give them specialized staff help in recruiting new help and asks their cooperation in the experiment for a few months' trial. At the end of that time if the employing work is well handled the likelihood is good that the department chiefs will have come through a learning experience which will carry conviction and spell agreement to the new idea for the future.

The executive, who will apply this kind of teaching sense in letting people come to realize gradually that what he wants they too may advantageously want and work for, is the leader in the best sense. He has rallied his followers to a course of action through their own conviction and desire. He is working with the grain of human nature and not against it. He is harnessing knowledge, enthusiasm and creative interest in behalf of methods which he believes he can show to be beneficial. And to the degree that the followers have come to trust his judgment and believe in the honorableness of his motives, he will get quicker response, prompter learning, and faster progress toward the desired objectives. Put people or get people to put themselves into situations where the logical outcome of carrying through to a conclusion means that they learn some new method or come to have some new desire or appreciation—this is the formula that the creative leader must employ.

Educational Values of Conflict. And for this very reason the leader will find that conflict situations can be made to have positive educational value if handled in a similar way.¹ Take a case such as that of a company with an employee representation plan whose employees voted to ask the firm to sell them stock on some convenient basis. At first the heads of the firm were reluctant to consider the matter seriously. A certain conflict of interests

¹ See ELLIOTT, H. S., "The Process of Group Thinking"; A. D. Sheffield, "Joining in Public Discussion"; E. D. Smith, "Psychology for Executives," Chap. VI; Ordway Tead, "Human Nature and Management," Chap. XI, XIV.

appeared to have arisen. But this company was resolved to make such issues, when they arose, an educational opportunity for all concerned. It saw creative values in recognizing conflicting desires if the situation was handled under the guidance of wise executive leadership. The company heads were at pains to find out why this demand had arisen, what it meant in terms of employee desire, what comparable experience in other companies there was which might shed light on their own problem. Meetings were held with the workers; facts obtained; discussion back and forth went on for several months in the effort to find out how the basic ends the workers had in view could be squared with what the officials and stockholders also wanted. No effort at compromise was made. What was sought was a new arrangement or plan that would satisfy all. And eventually one was evolved. *An integration of desires* was achieved and in the process, all concerned learned much not only about the problems and hopes of all the rest but they learned to think out a new line of action that would represent a creative because newly created solution.

Under wise leadership, in short, the occasion of new conflicts of interest or desire can be made also the occasion of new efforts at associated thought, constructive planning, and cooperative action. Invention may take place which broadens the outlook, extends the experience, heightens the grasp of those participating. The process of conflict-solving can thus be a splendid educational venture. But it requires of the leader a realization of the opportunity presented, a patient teaching sense to make use of it, and enough insight to help guide the creation of a new formula or integration along the best possible lines.

Training the Leaders

In line with all that has been said about the nature of the learning process, the conclusion is inevitable that *the best way to learn to lead is to get practice in leading*. Workers who show executive and leadership capacities tend to emerge in the course of the day by day work, especially if higher executives are on the watch for them. Indeed that is one of the definite responsibilities that someone must have as organizations increase in size, namely, being on the lookout for workers who can become group bosses, for group bosses who can become assistant foremen for assistant foremen who deserve a trial as foremen.

At each level the problem is to enable the executive head to become as good a personal leader as possible, to stimulate him to try to qualify for advancement by further study of technology, personnel, managerial methods, etc., to give him chances to try out at executive work at the next higher level when someone is away. In the last analysis there is no substitute for trying out a man in an executive post to see if he shows leadership qualities. As to the length of such trials it is impossible to be specific here.

Next in value to the actual testing out of leaders in positions of executive leadership may be *the use of group conferences of executives* of a given level. To discover and encourage leadership qualities it is often well to rotate the chairmanship of these gatherings. They may, of course, be either production

conferences on methods and current problems, or they may be a series of conference meetings held for definitely educational reasons. In the former case the matters for discussion are usually ready at hand, growing out of current operating problems. In the latter case the personnel department usually takes the initiative in organizing a course of related topics. The topic of "man management," or some equivalent title, can usefully form the basis for a course in leadership methods.

The subject matter for discussion may be of several sorts. Actual difficulties with workers brought in by members of the group, problems they have had to meet in handling people are excellent material if well chosen. Or problem situations that have been disclosed to the personnel department either through grievances which have come to its attention or through systematic canvassing of employee reaction to management methods (such as the surveys made at the Hawthorne Works of the Western Electric Co. or the methods developed by J. D. Houser).¹ Or, again, the subject matter can be cases, problems or projects compiled by the conference director from more general sources but illustrating the principles at issue; and these should be made available in advance to each member for study for written analysis of the case by each conference member before the discussion starts.

Conference discussion of leadership problems cannot work miracles in making executives good leaders. But what it certainly has done in numerous instances and can do under wise direction, is to get executives to think of their work in new terms, to begin to change their attitude toward workers, to make them conscious of the importance of their personal bearing, conduct, manners, etc., in first-hand contacts with subordinates. It comes as a great surprise to many leaders to realize that the way in which they walk about their department overseeing the work may be a source of irritation to workers, that their tone of voice makes a difference, that constant criticism and no commendation is discouraging. Regarding a hundred details of this sort, the executive can and should be made to take more thought and pains and in the long run thus improve measurably the quality of his leadership.

Also in connection with case discussions, the use of *carefully selected books for reading and study by executives* has proved of great value. Suggestions of good books for this immediate purpose of encouraging executives to develop the leadership aspects of their work are given in the bibliography at the end of this section. Naturally it is important that such reading be carefully guided, discussed and digested. And this implies that the personnel executive or some equivalent executive must supervise such reading activity if it is to be most fruitful.

Again, successful work has been done by *personal efforts with individual leaders who do not seem to be making good*. One authority has reported that with foremen who seemed to be using their time ineffectually, he made them write a report of their progress and that of their department in the last six months. This report was the basis of personal conferences; and then the foremen were asked to write another statement of their plans for depart-

¹ HOUSER, J. D., "What the Employer Thinks," Harvard University Press, 1927.

mental development in the next six months. This too was used in private discussion between each foreman and the personnel manager; and the result was that these executives came to think of their work in new and more productive terms. Similar personal efforts can be made with individual executives of any rank; and by conference, directed reading and friendly personal analysis great improvements can be obtained by a strong personnel manager who has the confidence and respect of others in the executive staff.

In short, there is at hand a considerable and growing body of experience as to ways and means of making executives leadership conscious and of cultivating leadership qualities in potential personal leaders. The chief requirement today is the desire of organizations to have some one, capable, top-line executive who is charged with this developmental responsibility. Where the need has been recognized and one or another of those methods employed the results have been definite, obvious and gratifying.

Conclusion

There are two or three points out of this whole discussion that merit summary emphasis. In the first place, the leadership situation has been shown to have certain aspects which are functional, impersonal, inhering in the position and where the need for leadership grows out of the relationship; and it has certain aspects which are personal, related closely to the calibre and characteristics of the individual who holds the executive post. It is important to make this point because it suggests the need of an attitude on the part of leaders which is not conceited or self-enhancing. In a real sense the leader is the servant and counsellor of the led by virtue of the position he occupies. And it points also to the importance of paying attention to those personal attributes of bearing, manner, attitude, physical conditions, etc., which make or mar the executive's success as a personal leader.

Secondly, good leadership is conditioned by sound, broad, unselfish purposes, objectives or aims on the part of the leader. He cannot expect to get people to want to be led to do things which are against their own interests, which contribute only to the good or gain of others. Fortunately personal enhancement, self-realization, and growth do not come for most of us in isolated, unrelated efforts of our own. The social world and the world of economic effort are areas of associated activity and people gain certain deep satisfactions through cooperative group efforts of a constructive character. It is not foreign to our natures to want to work productively in association with others. The right quality of leadership, in short, does not involve a strain on the loyalty of the led. But the supporting conditions for corporate efforts must be right for the individual if he is to be expected to lend genuine support and aid. Here is where the role of the leader is distinctive. He must be able to show in action, experience and results that the good of the led is tied up in concrete ways with the good of the corporate whole. And this he can only do if the corporate aims are liberal, plural, and inclusive.

In the third place, the leader's method of demonstrating the safety and social soundness of the corporate aims from the point of view of the led

must largely be by means of the actual experiences through which the employees themselves go. If in the course of such experience they find that they get satisfactions for themselves while also forwarding the leader's aims, the leader has succeeded in really bringing about a change of purposes. People learn of the validity of purposes through situations where they have experienced the benefits of those purposes. Moralizing, lofty sentiments, generous managerial principles or intentions—these are of less than no account until translated into working policies and specific methods which the workers discover in their relations with the company. Workers will learn to follow the leader where they find in action that the leader's desires and their desires are in comparative harmony. All of this is but another way of saying that the generality of people's desires are not anarchistic or selfish or exclusive. The new leadership is based on the assumption of the soundness of human nature, on a realization of its capacity for creative effort, growth and cooperative achievement. Where we have so often fallen down is in not providing supporting institutional conditions and policies, that are calculated to draw out the best in human nature.

Fourthly, leadership qualities are not a mystery or the secret of a few born geniuses. One of the first things to be learned in business is that we have to work with the human material that we have. Of course, an executive staff of low calibre can gradually be improved by substitution and replacement. But beyond that point the task of management is to make the best possible use of the human resources at hand. And with careful intensive training and personal cultivation, experience shows that leadership ability can be vastly improved. And the way to train is to have the desire, and to start to train along lines that are fairly well established.

There is an old saying that "the gods sell all things." By which is meant that what we want hard enough to work for can be obtained. And this is eminently true of the task of transforming our tens of thousands of executives into inspiring leaders of men. The conditions and requirements imposed were never so clear as now. The disposition of corporate groups to count the cost of getting good leadership was never so favorable. Even on the side of the broadening of corporate purposes to include the aim of helping to fulfill ends of personal realization among all its members, we are witnessing a slow but inevitable shift of perspective. The corporate form as such is relatively new and we are undoubtedly but at the beginning of efforts to build corporate structures in such ways that the rank and file can find happiness and satisfaction in productive economic service through loyal corporate effort. All this implies wise, far-sighted, imaginative leadership up and down the line. But it is for this leadership that we wait and to this leadership that we look to make economic life tolerable and truly contributory to the enhancement of living for all.

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CHAPTER VII

TECHNIQUE OF GROUP ACTION

COMMITTEE PROCESS AND COMMITTEE CHAIRMANSHIP

BY JOHN J. HADER

Present Need for Committees in Industry. The subject of committees in industry and their relation to general administrative functions is one that is receiving an increasing amount of attention by students of management. The impact of specialization combined with the influence of large scale production has forced upon those who are concerned with administrative problems the necessity of discovering ways and means by which the disintegrating influences of these two major forces may not only be countered but also utilized constructively. From time immemorial men have come together to "talk things over" but it is only in recent years that this getting together to talk things over has itself been made into a specialized function in industry.

Need for Definition. This is an administrative problem about which there has been much undefined thinking. The war and its attendant situations threw upon us a host of organizations and organized effort attempting to deal collectively with common problems. From the League of Nations down to the details of local community we have given ourselves over to dealing through committees with what had before either been taken care of by individuals or as in many cases had been left entirely undone. In industry elaborate schemes of employee representation and allied forms of joint dealing have been set up while in the higher reaches of management, committees of industrialists representing such industries as oil have been holding regular sessions. Some manufacturing firms have put their management on a committee basis to seek through consultation with those concerned the best solution of the problems at hand.

The term committee as used in common speech is usually taken to mean some representative body elected from a larger body or selected by an individual. It implies a togetherness for purposes of considering matters of interest. However broad or narrow the subject matter for consideration may be; however limited or unlimited the authority; however conclusive or inconclusive its consideration—the general term committee is used as a label and therein lies the reason for a good deal of the difficulty that creeps into the current thinking about committees. It might be lessened if we were careful always to give special names to special kinds of committees.

Purposes and Kinds of Committees. Before entering into a general discussion on chairmanship and its relation to committee process, a word must

be said about the purposes of committees. Probably no two people would agree upon anything that was set up as a final classification of the functions of committees. Committees are means to ends and these ends in view are as varied as all human purposes are varied. According as they are fitted into specific aims do they receive their specific character.

The three most general kinds of committees in industry are management committees concerned usually with matters of policy and administration; joint committees of management and the rank and file employees and finally employee committees in which the management does not share or if so only upon request. It is with the first two kinds that this discussion will deal. Oliver Sheldon, in his book "The Philosophy of Management" says:

Committees can only be of four kinds; firstly, executive in the sense of making decisions upon matters brought before it. Secondly, a committee may be co-ordinative in that it brings together certain individuals, representing certain definite functions or parts of functions for the purpose of ensuring that the work of each function is conducted upon lines corresponding to and harmonizing with the work of other functions. Thirdly, a committee may be advisory in that it brings together certain selected individuals to whom an official who requires special guidance in a difficult situation may refer. Fourthly, a committee may be educative in that it forms a means whereby an official may keep his staff regularly notified of events and policies.

We are not concerned with any question about the functional validity of any given set up of administrative or employee representation committee. Our considerations are of another sort. Granted that the committees are in operation, how are they being run? If the above or any similar classification of the kinds of committees is accepted, it will be seen at once that the processes of the committees will of necessity vary with the purposes. Arranging the above four kinds in a scale like this: executive-coordinative-advisory-educational, it will be seen that the purpose of the first, the executive, is to *do*, that is, to decide something. The coordinative committee is essentially *adjustive*, it does not decide but it may create a new situation. The advisory committee *gives* something, that is, its purpose is to deliver, it is meant to draw something out of the group. Lastly, the educational committee *gets* something, namely information is passed on to the membership. It will be seen that there is in this scale an arrangement according to formality, according as the matter is one calling for precision and definiteness in the way the committee is handled.

Chairmanship Functions. Executive committees, such as boards of directors, would of necessity have rules and regulations for the conduct of business. The problem of chairmanship in such a committee is essentially one of knowing how to steer the procedure down the well-defined channel provided by the constitution and Roberts Rules of Order.

On the other extreme of the scale is the educational committee. The receiving of information is no complicated process and the chairman's function when he is not announcing speakers or reading pronouncements is essentially that of a discussion leader.

It must not be assumed, however, that any given committee consistently adheres to these precise purposes at all times. At any one session it may

assume all four of the functions mentioned above, usually without either the chairman or the committee being aware of the change. And with the formal change may also come a complete change of mood in the group of which the chairman needs continually to be aware.

It is, however, in the two middle areas that the most delicate problems in chairmanship are called for. The functions of the coordinative and advisory committees cannot be as sharply defined nor are the functions of the chairman as easily to be determined. It is here that vaguely descriptive terms are used when people try to give the attributes of a successful chairman. They will say "he is a born leader; he has personality; he gets along with men."

Enlisting Participation. The success of an advisory or coordinative committee depends above all upon the free flow of ideas that is started; there must be an interchange of experience, for unless the chairman can enlist participation the committee is apt to have little success. Secondly, because of their informal nature, and the fact that there is usually a minimum of prescribed rule, the committees of this sort are dependent upon the chairman's conception of what the committee process shall be. What is easily overlooked in the setting up of committees of this sort, however, is the job relationship between the chairman and the members of the committee, and the way this may affect committee process. In a committee known to the writer the chairman stated his opinion of what he thought should be done, following the discussion of a certain case, and in concluding remarked: "How do you feel about it, am I wrong?" This chairman's conception of the way to get discussion in the group appeared to be that it was first his duty to state his opinion. In this case, for one of the members to answer that question directly and affirmatively meant that he would go counter to his superior for each member of the group was responsible to him.

Impersonalizing the Issue. In this case the "You"—"I" relationship created by the nature of the chairman's question "How do *you* feel about it, am I *wrong*?" brought in response a series of personalized replies that left the situation confused and instead of factual statements, which would have presented a clarified situation from which a decision to act might have been automatic, opinions were evoked and the chairman in confusion resorted to ridicule of one of the proposals and then in defeat deliberately changed the subject without reaching a conclusion and without consulting the group as to his reasons for so doing.

The question of impersonalizing the issue in committees is one that is not always recognized by chairmen and especially those chairmen who are directly responsible for the work of the group involved. Their position of power, the consideration given by their realization that the group in question is advisory to and functionally subordinate to them, places them in a position where only the most skilled and objectively minded can detach themselves from their authority and see the question merely as one of the group.

Can the opinion be separated from the person giving it? Every time we state our opinion there stands behind that opinion, as a soldier on guard, the self, the ego, the "I" of the speaker. This I wishes always to be unchallenged, it wants to reign supreme. Every one of us has the germs of

this autonomous I within us. We all tend to identify *ourselves* with our *opinions*. Now when that opinion giving I happens to be the chairman, who represents not only the chair as a group leader but as power factor and determinant in the life of every member present, a wholly different situation is developed.

Bringing Out Differences. If committees are to be genuinely advisory, it is well to ask how is advice obtained? When a man sets out to seek advice on a question we may assume that he wants not so much that people should agree with him in his position, but that if they differ with him they should express that difference and then tell why. Where, however, the chairman is not only the leader of a group but also the symbol of authority, it can quickly be seen that a different situation will prevail. If we assume that a primary reason for having committees is to bring out differences of opinion or to reflect different viewpoints for the purpose of obtaining in that way a more creative conclusion, then the question of how we are going to bring out these differences is fundamental.

Should Department Head Be Chairman by Virtue of His Position? The function of the technician is non-partisan. Can the chairman as technician see it as his function so to instrument his members that each and every one justifies the time he spends in the group by a proper rendering of his contribution? Knowing as much as we do about individual and abnormal psychology, we have long since learned that this cannot be left to chance. This raises the question of the functional validity of having the department head serve as committee chairman merely by virtue of his office, since what is wanted as a result of the group process is not that someone should have "his" way and get the group to agree, but that the situation in each problem should be uncovered to the fullest extent possible, and thereby reveal what form of action should proceed. Is this not a problem of pure method? The department head, as chairman, has an interest (a desire) in the way the group should proceed. His conduct of the meeting will thereby be determined by that interest. But it is also possible that his absorption in the details of the business at hand may lead to an overlooking of important aspects of his function as committee chairman. If the situation and not the personality is to control, is it not possible that some way can be found by which the fullest participation of the group is insured to yield a maximum of return? Can a way be devised that the chairman, whatever his rank, sees it as one of his first duties to uncover the "total situation"? *

Kinds of Conclusions. We need then to see this problem of technical chairmanship in the light of two questions: First, what kind of results or conclusions are desired and second, by what steps can they be reached? A guide to thinking about the results of committee process is the following chart with its scale of conclusions arranged according to the kind of participation involved (see Fig. 1, page 1680).

To the left, at the height of the line of individual dominance is **ACQUIESCENCE**. This is equivalent to someone ordering the group. The next less pronounced stage of dominance is **ASSENT**, that is, someone tells the group but does so with an element of explanation. In **COMPROMISE** we have the typical debate pattern where the group is divided. In a **CONSENT** agreement the

group has been carried along by developing the ideas to a point of willing acceptance, while in an *INTEGRATION* it has been possible to utilize fully the differences in the ideas of the group and embody them into a conclusion so that each feels that he gets essentially what he wants.

Space will not permit going into detail as to what is embodied in each of these conclusions so far as the *esprit de corps* of the committee members is concerned. We all know the wholesome effects that come from participation in a fruitful group process. We also know equally well that humiliating feeling that comes when we are "told where to get off." If the chairman can keep in mind something of what is involved in the conclusion that his group reaches he has gone a long way toward getting valuable group process.

Sectionalizing the Conference Procedure. The second problem of the technical chairman involves his ability to sectionalize the meeting and see it on its way toward the conclusion. He must see something of the parts of the picture which finally make up the whole, and he must see it as it proceeds.

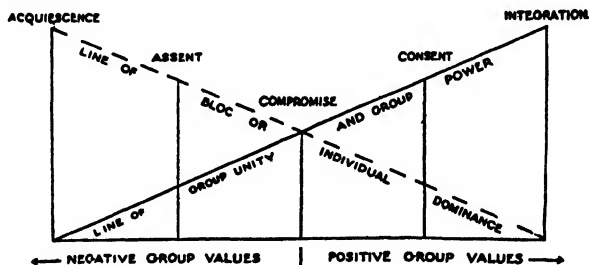


Fig. 1.

There have been attempts made of late to depict the exact stages that should take place in a committee on its way to a conclusion, but our researches to date have shown this to be improbable. There are frequently a variety of ways of reaching the same goal, depending upon the purpose in view. It can only be said at this time that there are various possible goals and varied methods of reaching these goals.

It must not be overlooked, however, that frequently the most important factor for the success of a committee's deliberation is outside the committee meeting. Are the issues kept open so that the group actually can work toward a joint conclusion, or is the matter all decided in advance by one or both parties?

As an illustration of what may happen in such a case this record of the functions of the chairman of a joint committee is shown. It will depict some of the sections into which such a procedure can be broken down for analysis (see Fig. 2).¹

¹ The chart on discussion from which this analysis of chairmanship is derived is part of a study on methods of analysis of the joint committee by John J. Hader and E. C. Lindeman, "Social Hypothesis," Harcourt, Brace and Company, 1931.

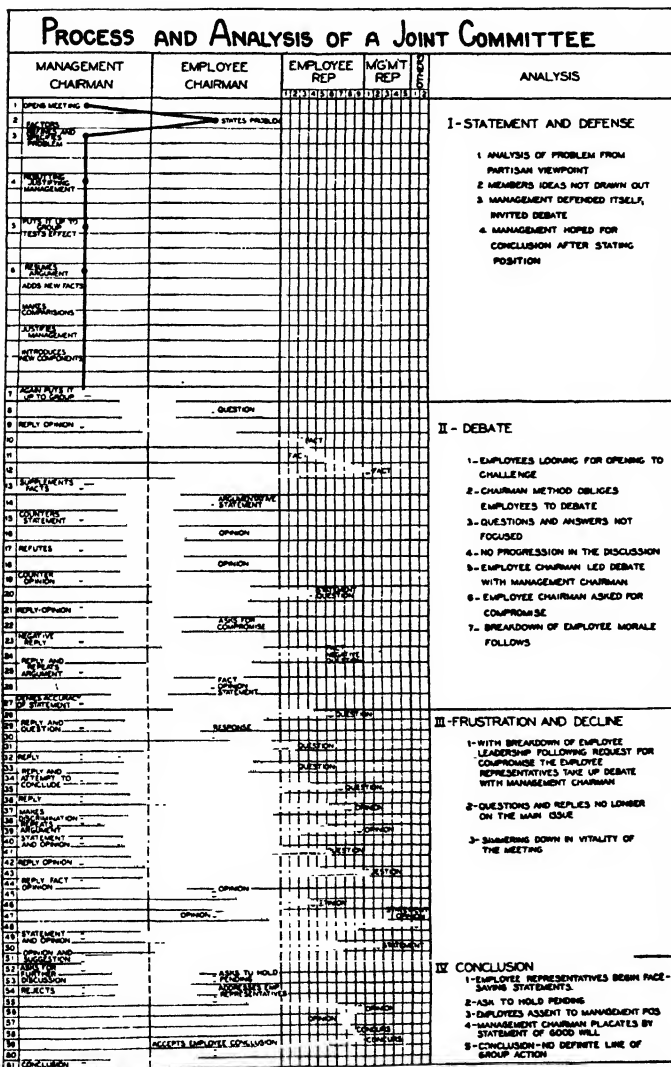


FIG. 2.

A Joint Committee. Sequence of the discussion from the point of view of the chairman's activities, as shown in Table I:

In this case the chairman was acting in a triple capacity:

1. He was presiding officer of the group.
2. He was a representative of management.
3. He was an expert in the sense that he probably had more knowledge about the problem presented than any one else there.

A fourth factor might be added, namely, that he was the highest ranking representative of the company at the meeting and therefore in a very direct

TABLE I

I	II	III	IV
Chairman opens meeting, stating that meeting has been requested by the Employee Chairman. <i>Presiding</i>	Employee Chairman states the problem.	Management Chairman makes rejoinder. <i>Rebuttal</i>	M. C. asks if any one disagrees with his statements. <i>Challenge</i>
V	VI	VII	VIII
M. C. resumes his rebuttal. <i>Rebuttal</i>	M. C. asks for group expression. <i>Opening Discussion</i>	Question-answer statement period. <i>Answering—summarizing</i>	Response to E. C. suggestion of compromise. <i>Answering—Rebuttal</i>
IX	X	XI	XII
M. C. asks if committee is ready to conclude the question. <i>Precipitating Conclusion</i>	The group, not being ready to conclude, reopened question—answer—statement procedure. <i>Answering—summarizing</i>	M. C. asks if there is anything further to be discussed. <i>Leading Toward Conclusion</i>	Employee's Representative asks to have question left pending. M. C. rejects. <i>Negating</i>
XIII			
M. C. closes the discussion with remarks leaving slight hope, and asking for confidence in Mgt. <i>Placating</i>			

sense responsible for the work of those in the committee. A list of the functions he was performing during the procedure of the committee follows:

CHAIRMAN FUNCTIONS

1. Factoring out the problem.
2. Refining the problem.
3. Specifying the problem.
4. Localizing the problem.
5. Rebutting argument.
6. Justifying management.
7. Putting it up to the group.
8. Testing his position.
9. Supporting his case.
10. Adding new facts.
11. Making comparisons.
12. Introducing related problems.
13. Stating the problems in inclusive terms.
14. Summarizing.
15. Closing the discussion.
16. Reopening the discussion.
17. Concluding the discussion.
18. Asking for a recognition of principle.
19. Asking for confidence.

Since in this case it was the purpose of the chairman to get the group to agree with him, or to put it in another way, since he did not wish to have the group bring him to a position of admitting a desire for change, it may be asked, was the method he used the most advisable one for his purpose? Note that from numbers one to four he was engaged in an analysis of the problem. As early as number five and six he was rebutting and justifying. He did not put the matter before the group until number seven and then it was necessary for him to debate the matter as indicated from nine to thirteen.

He then wished to conclude and attempted to do so but was obliged to reopen the discussion upon continued pressure from the group. The final conclusion was in the nature of an assent lacking the positive values that might possibly have been obtained had he used a method that would have involved some such procedure as this:

1. He might have invited the group in to analyze the problem with him.
2. He might have had them reveal their ideas on the subject by questioning them.
3. He might have held his own opinion in abeyance.
4. He could have taken a positive, explorative instead of a negative defensive position.
5. He might have thus obtained an understanding of the conclusion by all through their participation in it.
6. Thus, there would have been something in that conclusion which all could carry back into action.

Little has been said of the participation of the members of the committee. We have spoken of the difficulties that opinion giving can create and of the

inhibitions to participation that may come unless guarded against, when the chairman is also a power element in the group.

It is important to study closely the group's responses to facts, questions, and opinions. We need to observe the vitalizing effects of personal experiences, their place in the meeting and of the tone-giving qualities of humor we are all aware.

THE AUTHORITIES, FUNCTIONS, AND LIMITATIONS OF COMMITTEES

By E. C. LINDEMAN, *The Inquiry*

When Mr. Mussolini became Dictator of Italy, he discovered very soon that there were 150 holidays in the country, and that, if all the working people took advantage of them, they would be on holidays at least half the year. As soon as Mr. Mussolini discovered that, he issued an ultimatum which cut down the holidays from 150 to 40. If we had Mr. Mussolini in this country, one of the first things he would discover would be that we spend an untold volume of time and energy in committee meetings, and I should not be at all surprised, were he here, if he would issue an ultimatum cutting down the number of committee meetings one would be allowed to attend.

After all, the committee is an Anglo-Saxon product. It grew up with other Anglo-Saxon forms. It was one of the earliest, if not the earliest, representative social form. It became thoroughly incorporated not only in our legal and governmental systems but in our voluntary social system very early in the history of the English-speaking people.

We have now in Congress, in our voluntary groups, and in our jury system, a thorough-going series of committees which actually do, I presume, control our lives. If we knew where most of the authority in American life was generated, I presume we should discover it was in committees of one sort or another.

It is from that point of view that they do become vitally interesting; interesting not merely as devices but also as experiments, as something which can be reduced to not merely a waste of time but to actually creative enterprises.

Committee Difficulties. 1. *Irrelevant discussion* is one of the first difficulties with committees. Time is wasted, and people lose composure because discussion does not stick to the point. What contributes to irrelevancy? Why are people irrelevant? That is really a psychological question. If we knew why people were very good technologists, or good executives, good foremen, good workers, yet not good thinkers, or why when they get into a group they fail to think consecutively, we would be on the trail of one of the therapeutics for good committee function.

2. A *self-centered chairman* comes in with an idea he wants to put over. A chairman may be more interested in his own ideas than in the ideas the committee might have. It is possible that he is not only self-centered, but also probably too authoritative and insensitive to what is going on in the

other fellow's mind. This kind of chairman does not think what somebody else may have to say important enough to try to get it out and see its worth.

3. *One or two members of a committee may desire to impress a superior.* This may be done by irrelevant discussion, over-emphasis, or they may agree too readily with the superior. They may agree with the chairman. This is the kind of person who, without regard to facts, wants to impress people with all he knows, not only on the particular subject under discussion, but on things that have nothing to do with the discussion. Sometimes this kind of person impedes the whole process, not only by agreeing with the chairman, but by using another kind of superficiality—by disagreeing.

4. *Failure to state the problem or the issue before the committee at the outset.*

5. *Failure to set proper limits on the scope of the committee's interest or activities.* When a committee is appointed, whoever appoints the committee should state definitely what the committee is to be interested in and the scope of its activities. Failure to do that leads to useless discussion of subjects in which the committee probably has no interest. This leads to loss of time and energy because it is not the kind of problem for the committee to deal with. It involves such conflicts as frequently arise when the policy-forming and policy-executing functions of the committee are not sharply distinguished.

6. *Failure to come prepared for the topic.*

7. *Indifference of some of the members of the committee.* They probably disbelieve in the manner in which the committee is functioning. Consequently they assume an indifferent attitude and are a hindrance rather than a help to the committee process.

8. *Some members of committees do not get a chance to talk.* This may be because the chairman does not welcome their participation, or because he shuts off the discussion; or because two or three other members have dominated the committee so that everyone else feels unwelcome.

9. *Chairmen do not always properly phrase thought-provoking questions* with which to stimulate the group into active participation. This is also a problem for the committee members. Many of them think they are asking questions in committees when they are really making statements. Some chairmen also cannot distinguish between thought-provoking and crystallizing types of questions. The first questions should be of the former type, then at the proper time the chairman should be able to sense when the information has been brought out, and by a proper series of questions crystallize the discussion. In this way the group will have done the thinking.

10. *The chairman fails to postpone a statement of his own position* in regard to the subject under discussion. He already has a solution to the problem, and he voices it so early that the others withdraw from the discussion, assuming that since he has made up his mind, the matter has been settled.

11. *Politics or ulterior motives* very frequently affect committee process adversely.

12. *Committee members are frequently not qualified* to discuss the subject. They may lack either knowledge, or experience, or both.

13. *Committee process may be hampered because some people hold fixed ideas.* These fixed ideas prevent their paying any attention to what is going

on in the discussion, and they wait only for an opportunity to voice these ideas in an unchanged form. Others have fixed attitudes toward the chairman, or somebody in the committee, and this emotional set stands in the way of free discussion.

14. There is a tendency of the various members of the committee, including the chairman, to *jump to conclusions* before facts are presented. Sometimes they do not have sufficient facts, in other cases they may fail to make use of them.

Purposes of Committees. Committees may be used for:

1. Informing, educating, selling company policy.
2. Making policy, executive guidance.
3. Changing attitudes, coordination.
4. Producing goodwill, absorbing conflict.

Committees at times assume executive functions. The difficulties with entrusting executive functions to a committee are:

1. An individual is always on the job, a committee has to be called together.
2. People in groups will often do things in a way that they never would do as individuals.
3. They accept responsibility in a much lighter fashion.
4. In a case of mistaken judgment the responsibility can be focused upon an individual but there is a dilution of this responsibility when it is laid at the door of a committee.

Because insufficient attention is paid to the selection of the personnel of a committee they frequently are dominated by a few members. They may be totally ineffective due to incompetence or the members may simply lack the knowledge for dealing with the subject. A committee should never be set up unless there is a definite function for it to perform which cannot be performed in another way, and then its duties and authorities should be explicitly stated.

Getting Results. Assuming that there has been an adequate definition of just what the committee is to do and assuming that the committee personnel was wisely selected both for capability and for compatibility, the chairman is the key to the committee's success. He is like the hostess of a dinner party; he must know how to keep up the tone of the meeting; know the likes and dislikes of each member, draw this and that one out and at the same time be able to control the more talkative ones. The job requires diplomacy and a knowledge of human nature; a czar would never do.

From the mechanical side of committee operation as distinguished from the human side the necessity for adequate preparation in advance is important. Hours of time must be spent in getting up the docket, in framing the questions as well as putting them into an ordered sequence. If a committee is to make deliberations on an important matter the members should be given advance information before the committee meeting. This will save time and nerves in the committee. At the same time that this advance preparation should be thorough—it should not be too obvious, nor too cumbersome so that it gets in the way of the committee's progress nor rob it of the spontaneity that is so necessary to vital committee process.

The chairman too, should know how to go on from step to step in an ordered sequence leading up to the conclusion.

In addition to the suggestions made above, questions such as the following are involved in the technique of committees:

1. Is lack of preparation more common than lack of skill on the part of the chairman?
2. Is a different kind of skill needed for groups of varying size?
3. Is there a progressive ratio in the increased size of a group with:
 - a. The difficulties of successful committee process?
 - b. Skills required in achieving desired results?
4. Do we need a set of psychological rules to supplement Roberts Rules of Order, which merely establish logical sequence?
5. It is generally assumed that individuals are stimulated by the presence of the group. Is it likely that the reverse may also be true, namely, that people are bored and fatigued and driven to lethargy by the group under inadequate leadership?

The Problem of Authority. Where do groups get authority? What is the relation of authority to function? Can a representative body have authority without responsibility?

If we had had an opportunity to explore the background of these questions we should find our answers in the areas of contact on all the levels of authority there are in American life, and we should have to begin with the public itself. Some of the authority vested in business comes from the public and some also comes from the government: some comes from the stockholders, and some from the directors. And then, within management there is a continuation of this sequence of levels of authority beginning with the executive officers, passing through the technologists to the supervisory force, and finally to the workers. In this whole series there is a gradation from the extensive-general to the intensive-particular authority over the problems of industry.

We have been reminded of late by Miss Follett that authority goes with function.¹ If this is true then we must ask in the case of each committee that we are concerned with: *At what level in this above mentioned hierarchy of authority does it function?*—If it is a committee of directors, quite naturally its functions will be different from those of a committee of management on the supervisory level. If it is a committee of workers organized in a system of representation, their functions will have been described in their constitution. Their authority will be derived from their function and there need be no thought of a clash with any other level.

It must not be overlooked that responsibility and interest are very closely related. How often are subjects that are only remotely related, not only to the interests, but to the functions of committees presented to them?—And in the modern factory what added factors are there outside of a man's job to give him an interest in the operations of the company as a whole? Probably most of the members of the management group would not deny the axiom that every committee member has an active interest in committee

¹ FOLLETT, MARY P., "The Illusion of Final Authority," *Bulletin of the Taylor Society*, December, 1926.

affairs that concern his job. It is to be expected, too, that as a committee member he will thereby take responsibility for these items. But is it not true that almost any subject presented by management to a committee would in the end be somebody's job? Then how does carryover, or transfer of interest come about? How do we take a share of responsibility for other people's affairs unless these are also in some way our affairs? It is possible that those companies who have a wide distribution of ownership among the management and employees would be able to contribute some very vital suggestions for solutions of the problems concerned with authority, responsibility and interest. In other words there must be stimulation of interest in the areas beyond the person's immediate job; otherwise, a committee will cease to be a representative body functioning on behalf of a whole, and will degenerate into an arbitrary set of individuals bickering over problems of self interest.

CHAPTER VIII

PUBLIC RELATIONS

CORPORATION CONTRIBUTIONS TO COMMUNITY WELFARE AGENCIES

BY MARK M. JONES, *Consulting Economist*

It is important to analyze some of the problems which emerge from the fact that corporations doing business in several or many local communities are called upon to make financial contributions chiefly for local social welfare projects, and, in most cases actually do expend large amounts in response to such requests.

Subscriptions to, and memberships in, trade, professional, or other business organizations are not discussed; these present problems that are very different anyway, and should therefore have separate treatment. Nor are contributions not directly financial in nature included.

One other preliminary statement seems important: it is, that while many of the larger corporations expend several hundreds of thousands of dollars annually in the form of contributions, the problem lies in a field in which practice is still very much ahead of policy.

The Problem. The immediate problem is that of working out a rational apportionment, between the primary elements of a community, of the financeable cost of necessary local social welfare work. At the same time it is of highest importance that this be so done as to place no obstacles in the way of careful study of social welfare problems and periodic reorganizations in the hope that work of this kind may ultimately be reduced to a minimum. As understanding of the situation advances it may become apparent that there are other and better ways to deal with the problems presented.

The term "rational apportionment" is used in defining the problem because it seems evident that most social welfare work has relied mainly upon emotional appeals to attract support, that emotional appeals have little continuing power, and that now, after an existence of many years, we should begin to see reasons why such work is necessary and desirable. The term "primary elements of the community" is used because it is of course obvious that the nearer to the source of production wealth is tapped, the smaller should be the outlay to secure it for this purpose. "Financeable cost" is mentioned particularly because local social welfare organizations as a rule are and should be making steady progress in developing earning power with the result that a steadily decreasing proportion of the total expenditures of most of them must be financed by contributions. "Necessary local social welfare

work" has been mentioned because it is the view of most persons who look into the situation critically that there are grounds for doubt as to whether all of the expenditures that are being financed under this title are really necessary.

In considering the nature of the problem further, it seems desirable that we first remind ourselves that the corporations comprehended by the title of this paper are those which are in business, that business may be described as exchange of values, and that value may inhere both in goods and services. Our economic system contemplates that business shall employ capital and that capital is wealth used in or available for production. The Duke of Argyll observed that "wealth is (1) the possession (2) in comparative abundance (3) of things, (4) which are objects of human desire (5) not obtainable without some sacrifice or some exertion, (6) and which are accessible to man able as well as anxious to acquire them." John Stuart Mill pointed out that "what capital does for production is to afford the shelter, protection, tools and materials which the work requires and to feed and otherwise maintain the workers during the process."

Root of the Problem. It seems to me that the words "ability" and "maintain" in the preceding definition and statement on wealth are at the root of the problem. Corporation contributions often may be said to aim to maintain and develop the ability of men so that they may make the sacrifice or exertion of value in relation to the purpose of the corporation which will enable the men to acquire objects of human desire. The present world economic system is based on the ability of men, although of course I am not suggesting that it is based on this alone. So it seems that the ability of men and women must be maintained and developed if we are to have an economic system at all, and it is from this base that one's course must necessarily be charted in considering this subject.

Minimum Standards of Community Service. It also seems necessary at the outset to consider that custom has established as necessary, in many communities, various services to maintain and develop the abilities of men, which when first proposed or initiated were only deemed of value and importance by a very few persons. As we look out upon the situation now, however, it seems that most of these social welfare services have been created to round out local communities in order that there may be present within them the minimum standards of community service which the majority of residents think necessary. Social welfare agencies usually maintain most of the services not otherwise provided, yet necessary to induce persons to live and express their abilities by working in the community in question rather than somewhere else. There is a competitive aspect as between communities that should therefore be held in mind. It is also well to stress the fact that we live in an economic era and, under the conditions which grow out of this fact, social welfare work, like religion and education, only has meaning and vitality in relation to its economic sub-structure. Let us therefore consider local social welfare problems more specifically in this connection.

1. *Health* is necessary, to maintain ability, and before ability can be well or continuously expressed. Various agencies exist in increasing numbers to establish and safeguard good health, not only by effecting the cure of disease but by aiming at prevention. Thus we have a group of local social

welfare agencies which includes hospitals, dispensaries, nursing services and health promotional agencies of various kinds.

2. For many reasons, there are *individuals and families that at the moment are not on a sound economic basis* because they have no tangible wealth and are without ability that has an exchange value. This condition may result from voluntary or involuntary causes, but may be none the less real and the individual or group must be given relief by relatives, by friends, by private organizations existing for the purpose, or by tax-supported agencies existing for the purpose. The local social welfare organizations coming within the scope of this discussion at this point are usually privately financed and give financial assistance and advisory service, maintain homes for the aged, and operate protective and correctional agencies for adults.

3. Then there is the fact that approximately 30 per cent of our population are *children under fifteen years of age* some of whom cannot expect the support and care of parents, relatives or friends and therefore must be provided for in some manner by the community. There are also other children who have parents or relatives whose tangible wealth or earning power is so small that the children cannot be given the minimum attention that is commonly regarded as a social necessity. We therefore find child welfare organizations which care for dependent children and maintain day nurseries, kindergartens, and auxiliary school services.

4. Next there are many *educational problems* which, in the judgment of a large number of persons, are not receiving adequate attention from the educational agencies normally regarded as having the primary responsibilities for education. These result in the maintenance of organizations which require contributive support in order that they may give direct education to the foreign-born, may provide technical and professional training not otherwise available in sufficient quantities, maintain museums, libraries, Boy Scouts, Girl Scouts, and in some cases churches.

5. There are also important agencies which deal indirectly with the problem of maintaining health by emphasizing *recreation*. They also serve other important social purposes incidental thereto. We therefore have neighborhood houses, Y. M. C. A.'s, Y. W. C. A.'s, settlements, etc., and while each of them differs in its emphasis, all usually require some contributive support for which corporations are often approached.

6. Then there are organizations which might be termed overhead in nature because they deal primarily with the *management of the local social welfare work*. They give attention to the maintenance of common services as between the various social welfare agencies, to the coordination of effort, to the raising of money and to research. Thus there are councils of social agencies, community chests and, in some cases, foundations.

7. Finally there is a miscellaneous group of activities really conducted to raise money which in some cases is for social welfare work mainly supported otherwise, and in other cases is to support social welfare work not otherwise financed. Thus we have charity balls, police and firemen's benefit associations, souvenir programs, etc.

Then there is another aspect of the problem. It seems in order to point out that one might reasonably hold that the cost of attention to individuals or families temporarily or chronically out of gear with our economic sub-structure is often the price we must pay for weaknesses, failures or incompleteness of economic policy and therefore a proper charge against business. Whether the cost of relief is paid by production through public taxation or through private but joint agencies is of little importance in this respect. Business

pays it finally and the main difference of importance is that business sees the payment more clearly when it makes a contribution to a social welfare agency along with others than when it makes the payment through taxation in order that the work may be done by public agencies. It is usually true, however, that when local social welfare work is financed through the tax levy the cost is more widely spread over the various elements of the community.

Bases of Contribution. And now, as one more aspect of the problem, I should like to point out that the financial policy underlying local social welfare work at this time usually contemplates that contributions will be secured on one of four bases, which are (a) capacity to pay, (b) willingness to pay, (c) political pressure, and (d) sales pressure. It therefore appears that financing policies for local social welfare which result in requests for corporation contributions are still in the pale realms of shadow where they have little rational basis. The writer believes that most of these four bases for contributions at present are seriously open to question and that it is time to take steps toward the development of a rational policy.

This, however, brings us to the point where it must be recognized that there are important obstacles in the background.

Obstacles to Development of Rational Policy. Corporations tend increasingly to become national in scope and to conduct their affairs so that the activities of units in many different local communities must be controlled and coordinated. At the same time, however, it seems apparent that there is but little national-mindedness in the United States. We are still highly individualistic and but a few people are interested in establishing a more real national solidarity. This presents obstacles of prime importance. Back of any specific difference of opinion which may arise in the relations between a corporation that we may term national in scope and a local community or a local agency, is an emotional factor that stands in the way of a quick or complete understanding. Leaders in most local communities feel quite "sufficient unto themselves" in their social welfare work and to a degree that in the writer's opinion, is not warranted.

Another important obstacle is the lack of a more general understanding of science, the nature of science, and scientific methods. Many individuals will profess a desire to listen to the voice of the past in relation to a better way of meeting the problems of the present or planning to meet the problems of the future. However, when it actually comes to finding the point where their predecessors left off in their knowledge of a particular subject and trying to begin there without making the same mistakes over again, there are few indeed who have sufficient respect for accumulated experience to avoid going clear back and beginning where their predecessors began. This of course presents an obstacle of intangible nature that is of the greatest importance. A business corporation carrying on its activities in several communities finds it necessary and profitable to conform increasingly to scientific methods. There may therefore be an unconscious or subconscious clash between accumulated experience and emotional individualism, and it may occur without realization of its true nature or presence by either party.

Another obstacle in the background that is of distinct importance although related somewhat to the preceding one is that many are inconsistent enough

to clamor for liberty and complete independence at one moment and in the next reach out for the advantages of cooperation and organization with no willingness to pay what it costs. There is little realization of the essentials of group action, although it is generally recognized that there are advantages in organized cooperation. However, it is not often conceded that these advantages may be gained only at the price of conformity to essential principles which must of necessity restrict individual freedom of action somewhat. In this respect we still seem to expect to "eat our cake and have it too."

Then there is the important obstacle represented by the view that outside agencies, businesses, or corporations, take money out of the community while local businesses or agencies keep it at home. No one will question but that, within reasonable limits, there are definite economic advantages in bringing demand and supply together as near to the demand and as economically as possible. There are limits within which this can be done, however, and it is easy for misunderstanding to develop, as well as for one who takes but a superficial view to overstress the principle of keeping money at home. In studying this question from the several different points of view necessarily involved, it should become clear that it is wasting one's breath to try to prove the complete self-sufficiency of a local community in the United States. It does not seem necessary to delve deeply into our economic or social structure to see this, but if we stay in the realm of ideas alone I think it will become apparent that it is one more popular fallacy that should be exploded. The minimum necessities, simply as ideas required to maintain a community as an organized and vital force, are not entirely present within its boundaries. Assuming that ideas finally should be the basis of all action, I think it obvious that ideas generated locally, without access to a wider range of experience than that which is purely local, are seldom good enough to maintain local business and social efforts, much less improve them. This, of course, is a very large subject and one that might well have an entire paper devoted to it, but I refer to it in passing because one should note our increasing interdependence and realize that the sooner the "Main Street" point of view and the "Wall Street" point of view are intelligently adjusted to each other the better off the nation will be.

Finally there is the important obstacle represented by the lack of a rational financing policy for local social welfare work. As before mentioned, this work began with an emotional appeal. It seems clear that much of it is in transition from contributed support to a basis that is more sound from an economic point of view. Possibly the services rendered may be measured increasingly and charges made accordingly. In the meantime, however, the emotional appeal presents a real obstacle because business corporations must have good reasons for disbursing money and cannot allow emotion to sway them.

The Points of View Involved. If we move now from the classification of the problem and consideration of its background to something a little nearer, we will find that there are generally six different points of view involved:

1. There is the local general public. Its view is vague and indefinite and can be described in many ways from the standpoint of this paper. It seems, however, that it may be divided between those who are economically

self-sufficient on the one hand and those who, for various reasons, may not be. The general public is a potential rather than a real factor but is important because, once an issue of general concern is drawn, the public usually interests itself and becomes the determining factor.

2. Then there are the few capitalists and financiers who usually are the leaders not only in finance and business, but in dealing with the problems of the many who at the moment do not have stored up wealth or earning power.

3. Next there is a secondary group of leaders that we might call the local business men, who control business concerns operating as a single unit or conducting limited activities within the community, this group of leaders not being active in community affairs.

4. Then there are the local social welfare agencies which give organized attention to various social problems. These may be divided between those financed directly out of tax collections, and those financed privately by individuals and organizations chiefly through contributions.

5. Next, we have an important local factor that has developed particularly within the last four or five years in the form of community chests. These represent agencies through which the contribution requirements of local social welfare are raised cooperatively and in an organized manner.

6. Then on the other hand we have the business corporations which may be termed national in scope because they maintain important units in at least two places, and usually a great many more. Their point of view and the problem presented to them vary somewhat depending upon whether they have local retail stores, local or area sales offices, local or area wholesale distributing units, or local manufacturing plants.

To take up each of these points of view and analyze it separately, except from the standpoint of our subject, would require more time than is available. We shall therefore endeavor to consider the problem chiefly from the last point of view, *viz.*, the national corporation. When I use the term national corporation or national business corporation, it implies no sharp classification between business concerns, except that it excludes local business enterprises that have no important intercity control problem. National distribution, or widespread interstate distribution, or widespread intrastate distribution should usually provide the test as to what industrial concerns should come within its scope, and on the other hand a few or many local retail stores would provide the test for a purely distributing concern.

Therefore let us next consider briefly the corporation in comparison with the individual.

Legal Basis for Corporation Expenditures. Practice has run ahead of policy in this field, as suggested previously, and this fact is emphasized when one turns to look up the limits within which a corporation may make expenditures. The corporation is a creature of the law and its directors are in a position of trusteeship. When a management acting for a board commits a corporation to a payment, it is on questionable ground if the purpose for which the commitment is made does not clearly represent something of value or advantage to the corporation. It is my understanding that so far as the courts have gone into the matter, there has been a general willingness to leave much to the discretion of the board of directors. There is therefore a wide divergence in views, so that unless it appears that a payment is quite definitely

for some value, that sooner or later accrues to the corporation direct, or to it through its employees, the payment might be challenged on the ground that a board of directors has no power to give away stockholders' money. This of course is a technical view of the situation and may not be an entirely correct or complete presentation of its legal aspects, because the attitude of the court may vary according to the state, but one who wishes to analyze the problem more deeply will do well to consider this essential difference between a corporation and the individual. When contributions are involved it is clear, however, that the individual may indulge in philanthropy within very wide limits while it is also clear that a business corporation may only venture a short distance into what is labelled philanthropy, and then only in case it is the judgment of its board of directors that some advantage accrues to the corporation.

It becomes increasingly evident that there are many cases where the words "contribution" and "gift" are questionable if a business corporation's affairs are under consideration. Normally these words imply no direct and definite accrual of value to the contributor or giver, and their use therefore is open to question where it appears that some value accrues to the corporation. It also seems clear that if a corporation makes financial commitments towards the cost of local agencies which are really necessary to meet continuing or occasional needs of employees or their families, these might more accurately be described as (a) a payment for services rendered, (b) a premium against social contingencies that may arise, or (c) an investment to create community conditions on which a return might reasonably be expected in the future. In all of these cases a board of directors might regard the outlay as a necessary and proper expense.

Normally the cost of maintaining the minimum acceptable standard of community life is considered a proper assessment against the members of municipal corporations although the relation of a resident and citizen to his city or town is essentially different from that between stockholders and business corporations. Even though there are wide variations, however, it seems important to note that the difficulties in financing local social welfare work arise chiefly out of a difference of opinion as to the necessity, as well as the manner of meeting the cost of improvement or advancement of standards. The individual resident of a community of course has much local pride even if he may be limited in experience. He is usually much more in readiness to make outlays to advance community conditions than would be the case with a business corporation which must at all times be prepared to defend itself by showing good and sufficient reasons for its expenditures. The individual citizen is therefore willing to spend more than may be available from taxes to maintain a particular standard of community service or to raise the standard. He naturally exerts pressure on all factors in the community to join in sharing the cost of what may be described as social welfare additions and betterments, but as yet he has worked out no basis for making a reasonable apportionment of the cost.

While there is still little definite evidence on the subject, it seems logical to touch next on the kind and degree of corporation participation in the cost of local social welfare work.

Corporation Participation in Local Social Work. A corporation may not only contribute financially but it may indirectly make a contribution by permitting local representatives to occupy positions of leadership in community affairs. Next, it participates indirectly through the endorsement which may be given to a proposal or program as a means of aiding in the enlistment of interest and support to establish and develop it. Next, it may participate by making available the use of property as might be the case in the event that real estate, building or equipment are used for local social welfare purposes or on occasions. Then it could participate through a contribution of goods, as might be represented by products of the company or supplies given for local social welfare purposes either without charge or at less than the cost at which the welfare organization could obtain the same articles otherwise. Finally it might participate by making available the services of outside specialists to advise regarding a particular local social welfare problem.

Financial participation as a rule would fall somewhere within the following classification: (1) contributions for current budget, (2) contributions for special projects, (3) contributions for buildings and equipment, (4) contributions for endowment, (5) memberships from which direct advantage accrues, (6) travel and meeting expenses, and (7) periodicals and publications.

Expectations as a Participant. In connection with the consideration of requests for contributions, a corporation may often make as great a contribution through its expectations as it may make financially. While there may be many specific points of interest to which attention should be given the following tentatively suggested standards should be helpful in many cases:

1. The particular local social welfare organization for which amounts are made available is dealing with a real need and is not overlapping or duplicating the work of another efficiently managed organization.

2. The organization has the necessary minimum of equipment to conduct its work with reasonable efficiency.

3. Reasonable progress is being made in correcting the conditions from which the need for the work of the organization arises.

4. The work can be more economically and efficiently conducted under a separate organization than as a part of another organization with which it might be affiliated or consolidated, whether such a relationship has been considered or not.

5. The board of directors are responsible citizens who are generally recognized as leaders in the community and at least one-third of them give sufficient attention and time to make the board a vital and controlling factor in the work.

6. The organization has an adequate financial system, including a budget and the proper books of account and financial statements to make the budget effective as an instrument of control and has its books audited at least annually by auditors who have no part in keeping its books currently.

7. The cost of raising its contributions is not excessive.

8. The financing policy for its work results in a steady pressure to find a business basis for financing the work and for reducing the proportion of the cost that is required in the form of contributions or income from the amounts contributed.

9. There is a definite statistical system which keeps track of the work done as well as of the conditions in the field with which the organization is concerned, but does so without over-stressing unimportant items.

10. The funds of the organization are properly safeguarded and managed.

11. The purchases of the organization are managed so as to make for the most prudent outlays and in no way are controlled by considerations of profit, directly or indirectly, either for employees or members of its governing body.

12. The employed personnel are competent and are dealing with the problems of the organization in a practical way.

13. A cooperative attitude in relation to other social welfare agencies and other forces dealing with the problems of the community not only characterizes the work of the organization but is manifest to others.

It is well to hold in mind that if a corporation's payments are contributions it is in the position of principal while the beneficiary organization is in the position of agent. So far as responsibility can be placed therefore it finally rests on the principal who naturally is bound to show that all reasonable steps have been taken to establish the propriety of the participation.

Bases of Financial Participation Usually Found. The lack of a rational financing policy is evidenced quite definitely by the tendency of those enlisting support for local social welfare projects to do so on any basis that they can "get away with," and a similar tendency on the part of those dealing with the giving of corporations to restrict their contributions to the smallest possible amount. While the whole question is still very much in the realm of emotion, at least nine factors have been mentioned as bases for apportioning the cost of such work. These are: the local investment of the corporation; the number of persons employed; the value of products of the local manufacturing plant; the dollar turnover of a distributing plant; the gross sales of a retail store; the extent to which the policies and processes of a local manufacturing plant are reflected in local social welfare problems; previous contributions of the corporation or its predecessors; commercial pressure exerted on the corporation by local customers, financiers, politicians or others; and the securing of favorable publicity and the building of good will. In the writer's opinion, most of these are open to question.

Possible Scientific Basis. While it probably has not yet been done, it seems to me that it should be possible to develop a rating scale that might be used to cover each of the three main kinds of local interest of the national business corporation, *viz.*, manufacturing, wholesaling, and retailing. Before this can be worked down to individual companies, however, it would be necessary also to divide the total amount to be raised so as to determine the amount that may reasonably and legally be provided by corporations as against individuals. Little if any progress has been made in this direction as yet so that no specific suggestions as to such a division are offered at the present moment.

As an example of one method of approach to the subject after the quotas of all local manufacturing concerns had been properly determined as against those of other corporations and of individuals, the following rating scale is offered to suggest one line of attack on the problem of apportioning the

total manufacturing quota over the separate manufacturing units in the community.

RATING SCALE

	Relative weight
1. Relative percentage of local plant operation at approximately 85 per cent capacity during each of the past five years.....	25
2. Average number of employees actually employed on the last day of each month during the past year in comparison with the total average employed by other plants in the community on the same days.....	25
3. Comparative degree to which the corporation itself provides modern local facilities to aid those seeking employment and the maintenance of hospitals, clinics, nursing service, etc., for employees and their families, thus reducing the need to provide for the same services through social welfare organizations.....	20
4. Comparative degree to which the corporation itself assists employees to provide against loss of earning power through pensions, thrift plans, insurance, etc.....	15
5. Comparative effect during the past three years of conditions of work in the plant and particularly of special processes, on the physical condition of employees or other residents of the community.....	15

In the other cases, *viz.* wholesale distributing units and retail, it seems doubtful that there is any other basis upon which participation might be worked out relatively than the number of employees.

While favorable publicity and good will may enter into such a question to some extent, payments made with that consideration in view probably should be classified as selling expense and not as contributions.

Cooperation Procedure Should Be Systematic. This is a vast subject in itself and no attempt will be made to analyze it in detail at this point. If a corporation has not given organized attention to its contributions up to the present and has left such matters to individual executives, it must of course assemble its facts so that it has a complete record, in some one place, of payments made for local social welfare purposes. At the outset there must therefore be a period of survey and organization of data incidental to which important economies may often be effected. After this step is taken, the question of intermittent surveys arises, and the corporation which desires to go into the matter carefully will sooner or later find it advantageous to work out a systematic procedure to deal with all phases of the question including the method of handling contacts when requests are made, a procedure to have requests and recommendations from local officials checked at a central point, etc. There is also the problem of dealing with an original application, the question of how to handle renewals and the extent to which a corporation should allow local representatives to be active in the control of local social welfare work. Further to be considered is the use of contributions to make certain that the implied commission which the cooperation issued, by making the grant, has been executed.

It seems of the highest importance *that the national business corporation go to unusual lengths to avoid the local irritation that automatically develops when absentee control becomes too apparent or seems arbitrary.* In recent years the results of this tendency have sometimes been referred to as the controversy of "Main Street vs. Wall Street." While it may not be immediately apparent, there should be some advantage to the local community if there is the more intelligent restriction of the activity of the local business unit, which usually occurs as a result of linking it up so that it receives the benefit of outside supervision. Because there is so little real understanding of the values which flow both ways when this occurs, however, it seems of great importance that executives of national business corporations guard against a procedure which creates a feeling in a local community that "we cannot do anything without the approval of Chicago" or "we can't get it by New York." It even seems questionable if a local manager is allowed to give as the reason for not participating in some local project that "I recommended it, but Detroit won't stand for it." It seems beyond question that it is unnecessary in dealing with these matters that the out of town or overhead units in the business organization be mentioned at all. A proposal should be considered on its own merits and, as a rule, the reason for non-participation should be stated, rather than to give the impression that some remote control is probably arbitrary and acting in a high-handed manner to prevent meeting some need that a number of local people think important. The procedure of the national corporation should therefore give the most careful attention to what the local contact man does, and what he says.

Justification for Participation. A corporation national in scope or important from a regional standpoint may broadly consider that the provision of the local social welfare services commonly regarded as necessary to maintain the minimum standard of living which makes it possible to secure and hold desirable employees in a given community is the main justification for its financial participation in the cost of such activities. This does not imply that there is justification for participating financially in all local social welfare work, but that a reasonable case may be made to the effect that values accrue quite directly to the corporation as the result of work done by many of the agencies supported.

There is little or nothing to be gained by discussing justification from the standpoint of obligation, as neither practice nor policy has proceeded far enough as yet to show that there can be an obligation to make a "contribution." It seems far more important that justification be considered from the standpoint of values accruing, or services rendered, and a reconciliation of views gradually effected around that principle.

Where a purely "company town" is not involved, the business corporation, through participation with others in the joint support of local social welfare work, should gain two real advantages, viz.: there should be a better quality of social welfare work done and the cost of doing it should be less than if several additional and independent agencies were to be maintained. Moreover the business corporation, the activities of which are extended widely over many communities, is not only relieved of expense by participating in a joint effort with others but it is also relieved of a heavy burden of

responsibility that might otherwise rest more directly on it. By supporting local sponsorship and management, closer supervision and better service should be given than the national business corporation could provide if it were to attempt to meet the same needs from a distance or if the non-participation of several corporations forced provision through local tax levies to meet the cost of certain welfare work deemed necessary by local leaders.

Another justification for a business corporation's participating financially in jointly conducted local social welfare work, under private local leadership, lies in the fact that if the same work were to be maintained by local governmental agencies the cost often would be much higher. The fact that it would be higher of course might not be apparent because the cost might not be separately indicated or looked up when taxes are paid.

Under the heading of justification it is important again to refer to the fact that the whole problem is made difficult by the terms used. As previously stated, there are grounds for doubt as to whether the word contribution is properly used in respect of amounts made available for many social welfare projects. It seems clear that as soon as there is widespread recognition that a certain piece of local social welfare work has value, it is doubtful as to whether the word contribution should thereafter be used. Some observe that the word has been carried too long and it is particularly open to question if it is converted into a phrase by adding the word "voluntary." This point is made on the ground that it hardly seems reasonable to speak of one of these payments as a voluntary contribution, and also as a payment for values accrued, or services rendered, at the same time.

Another set of underlying considerations that has significance from the standpoint of justification emerges from the fact that what occurs to the employee or his family, during the two-thirds of his time that he is not at work, usually has a very direct bearing upon what he does during the one-third of his time that he is at work. The illness of the worker or the illness of his family, and the use of leisure time, can hardly be waved aside and left for casual and unintelligent treatment, if for no other reason than that the cost of dealing with the problem in that manner on a long range basis is greater than if something is done at the present time of constructive nature. Social welfare agencies concern themselves very largely with the other two-thirds of the employee's day. Moreover, it is important that a corporation having a large interest in community affairs, because it maintains a large working organization, should not hold itself aloof and leave social welfare planning too much to others. The fact that two-thirds of the time of its working force is spent outside of the control of the local management cannot be taken as justification for non-participation in the study of the problems incidental thereto and the formation of the plans. It seems far better that the corporations provide for direct representation in the making of plans than to leave this entirely to others.

Favorable publicity and community good will as a justification for financial participation of the corporation in the cost of local social welfare are somewhat open to question. Just where the fine dividing line between what is right and what is questionable falls is not yet clear. It seems reasonable to believe, however, that the extent to which publicity and good will shall

enter into a decision made with an eye to sales falls outside of the scope of this paper and presents a question of sales policy and of selling expense. If, however, participation is decided upon without an eye to possibility of sales, and without an eye to the accrual of values, or to services to be rendered, it is doubtful as to just where it leaves one. The amount would probably be charged to general expense anyway and justification found in the higher realms of policy above and beyond that of contributions.

Competitive Aspect. It also seems true that there is a competitive aspect to the justification of corporation contributions. The kind and extent of participation by a national business corporation in the cost of local social welfare are and naturally must be affected to some extent by the standard of participation set by local manufacturers or retailers in similar or competing lines. Whether it is reasonable or not, the failure of a national business corporation to participate on a basis that compared favorably with these local competitors is used against the outside corporation.

Moreover it seems true that as yet the policies of national business corporations have seldom been sufficiently defined to indicate the extent to which these outside corporations can make their local managers adequate substitutes for the local capitalists which they in some cases replace. The owner and manager of an important local industry that is taken over by an outside corporation, and the owner and manager of a large department store that is added to a national chain, usually have been quite different from the community standpoint than their successors because of the greater autonomy they naturally had in conducting the business. The national business corporation naturally will desire to build up a local representation which will compare favorably with its predecessor or his present day counterpart, which we shall here describe as the local capitalist.

The Community Chest. One of the most important developments since the war on the side of organization and management of local welfare work is the so-called community chest. There are now about 325 of these in the United States.

Local community chests present two main questions to the national business corporation. The first is the nature of and extent to which a local agent of the corporation shall participate in the social welfare work of the community and the actual work of financing it, and the second is the extent to which the corporation should finance the social welfare work included in the community chest budget.

The community chest in theory offers definite advantages, but in its present form it also presents real disadvantages. The restraining influence it exerts on the multiplication of appeals locally, however, is regarded by many as so important that the other weaknesses in the idea must be grappled with and straightened out. As a matter of fact, it may reasonably be said that the whole structure of local social welfare organization is still in the process of development, and that so far as the community chest is concerned it should have reasonable opportunity to prove itself.

Of course, from the standpoint of the corporation one of the outstanding irritations is the tendency of local leaders to exert sales pressure as a

means of forcing contributions to community chests. Competing corporations are frequently played against one another and the local leaders thus exact contributions by threatening to place orders elsewhere. A business corporation that has no reasonable policy as to participation in the cost of privately operated local social welfare cannot expect reasonable policies to be followed by local leaders. Most corporations, however, are not in this class. In the last analysis, the use of sales pressure is a hold-up method, and certainly can have no place in a rational financing policy for social welfare work. If a corporation allows it to be "put over" it is not proper to classify the resulting payment as a contribution. It should be considered selling expense. Of course the continuance of the practice will engender a corrective, but it should not be allowed to proceed to that point before it receives intelligent attention.

Another important problem, from the standpoint of the business corporation, is presented by the fact that many local social welfare projects, which vary widely in importance from the standpoint of the corporation, are financed through the budget of the community chest. The corporation may designate its contribution, but the policies followed by chests practically nullify the purpose of designation. The corporation then is confronted by real difficulties if legal restrictions are operative. Many of the projects supported by local community chests have little value and importance to the majority of business corporations, and can hardly prove that the values they create accrue very definitely to the corporation.

The community chests have a national organization known as the American Association of Community Chest Councils. This organization has recently promoted a study of the problem of national corporations in relation to the support of local social welfare, and a book presenting the results of what was largely a factual study has been published and is available from the National Bureau of Economic Research.

Taxes. A review of corporation contributions no matter how brief would hardly seem adequate if federal taxes were not mentioned. The problem here arises chiefly from the view of the federal tax authorities that they have no right to encourage generosity with other people's money. The Revenue Act of 1928 provides in Section 23 that in computing income there shall be allowed as expenses all the necessary and ordinary expenses paid or incurred during the taxable year in carrying on any trade or business.

The difficulty apparently arises because the phrase "ordinary and necessary expenses" is not defined in the law. The tax authorities question contributions made by a corporation as ordinary and necessary expenses.

No instances in which this question has been fought out with the federal tax authorities by a national corporation have yet come to our attention. It appears that as a rule the amounts involved have been relatively small, and that most of the corporations have had too much at stake in other pending tax cases to exert pressure along these lines. There has been some discussion as to ways and means of getting at the problem but as yet no definite course of action has been determined upon. If, as previously suggested, it appears that the word contribution is not correctly used and that some

value accrues to the corporation, the way out should be less difficult than it has seemed to be up to this time.

There is a statute in Ohio that authorizes Ohio corporations to cooperate with other corporations and individuals in the creation and maintenance of community funds or other philanthropic and benevolent instrumentalities conducive to public welfare. This law gives the directors power to appropriate for such purposes such sums as they may deem expedient, and as in their judgment will contribute to the protection of corporate interests, subject to the proviso that special authorization is required if and when such expenditures in any calendar year exceed 1 per cent of the corporations capital stock outstanding.

Conclusions

It seems reasonable to say (1) that a rational basis of financing local social welfare work yet remains to be developed, (2) that the contributions of corporations are described in a questionable way if the word "contribution" is used when value received in any way enters into the making of the contribution, (3) that a corporation cannot "give away" money at all, in the sense that no value accrues to it as the result of giving, (4) that a national business corporation must proceed slowly in participating in the cost of local social welfare work and that its participation must depend mainly upon the number of its employees in a local community, and to some extent the effect of its own policies within the community, (5) that a corporation is more restricted in its powers than an individual, (6) that a corporation should exert the same incidental constructive influence in connection with so-called gifts for which opportunities are open to any constructive-minded giver, (7) that the corporation should have a well defined policy with respect to contributions and such procedure as the amount of its contributions warrants, (8) that steps should be taken to reconcile the points of view of the leaders of the local money raising organizations with the national business corporation policies in the same field, (9) that there is a sound basis for many local social welfare projects, but at the same time there is much that is questionable from a corporation standpoint, (10) that sales pressure to secure corporation contributions for local social welfare is simply a hold-up method that may easily lead to reprisals, (11) that the procedure of the corporation having many local contacts should be carefully standardized so that it does not become notorious as a factor in the community that is insensitive and unresponsive to reasonable community needs, and (12) pending a more complete rationalization of practice in this field, compromises must be made as usual but that the expedient thing should be supplanted by sound policy at the earliest possible date.

Finally, it is my own impression after studying the question that on the whole the business corporations and especially those having national distribution are much more reasonable about putting money into local communities for local social welfare, regardless of whether they do all that they might do, than many local communities are about soliciting or treating contributions from corporations for these purposes.

THE SCOPE OF PUBLIC RELATIONS WORK IN INDUSTRY¹BY LEON V. QUIGLEY, *Technical Editor, Bakelite Corporation*

Modern industry, built fundamentally on research, production, and sales, has now developed an auxiliary department which coordinates with the first three in relating industry to its market or "field of force." This organized effort—interpreting and relating industry to its clients and to the general public—is designated by the term "public relations." The work embraces several distinct lines of activity, but always there are two principal standards which it is expected to meet. From the standpoint of science technical information must be unequivocally accurate; commercial effectiveness demands that it be interesting and keyed to the readers' viewpoint. Granting this twofold standard, public relations work in industry can proceed most effectively when its purpose and methods are understood and constructively criticized by the physical scientist, engineer, and economist, no less than by industrialist and commercial executive.

In citing the departments of research, production, and sales as fundamental in modern industry, we are, of course, additionally aware of the importance of finance and administration. We are assuming, however, that these factors underlie industry as a whole, and in the interest of conciseness we shall not elaborate on their function. Likewise we are mindful of numerous other departments in industry, such as purchasing, advertising, engineering service. The scope of the present paper will not permit a discussion of these several related departments. For the purpose of this *résumé*, they will be understood to be included under the three major divisions, research, production, and sales. So, too, public relations activity is related, particularly to sales. In some measure it could be classed under each one of the three fields, but in view of the scope of duties it is probably best understood when separately considered. To a limited extent public relations work can be performed, and is performed, by workers in every department of industry. In organizations of considerable size, however, the field of the activity becomes automatically so large that a separate departmental unit is assigned the task of its direction.

The work of such a department may be defined as an organized and sustained liaison effort dedicated to the task of coördinating an organization with its market or field of service. In this function it does not replace or duplicate the work of service engineering and sales, but serves rather as an auxiliary. An interesting fact is that public relations activity does not operate like sales promotion and advertising, within the scope of their correct definition. True, it is conducive to sales results, but its methods are those of mediation rather than promotion. It studies and seeks to improve the relationship between industry and its market, but it differs from advertising in the content, method, and appeal of its work, and notably in the regulation of emphasis.

The economic value of public relations work is found in the fact that it serves to relate industry to its market. Thus it participates in the develop-

¹ Including excerpts from address before the Division of Industrial and Engineering Chemistry at the National Meeting of the American Chemical Society, Atlanta, Ga., 1930.

ment, direction, maintenance, or increase of commodity interchange. Commodity interchange is usually the *raison d'être* of business, commerce, or industry.

Origin of Public Relations Work. The origin of public relations work can be traced to the older profession of law. Analogies are found in the logic of its procedure, the advisory nature of its counsel, and in the reliance it places on expert testimony. In industry the advisor in public relations is as yet less understood in his function than the corporation counsel in his legal function. This condition appears natural, however, when we realize the relative antiquity of the legal profession. Probably difficult to define was the profession of the first lawyer who stood forth to interpret the position of a client. Organized legal counsel developed only after the premise was granted that there was both justification and value in having some particular consultant designated to study the procedure of the law and to specialize in presenting the other fellow's case at court.

Like the business of law, the work we are discussing is as old as human experience. The role of the ambassador is not new. However you may regard the term "public" as descriptive of the mediation or liaison department, the word "relations" is here properly explicit. Not only does it imply the coupling of things together, but it means also the act of recounting, describing, narrating. Thus, according to definition, counsel on public relations serves both as coordinator and narrator. Public relations work, as a profession, had its industrial origin at the beginning of the present century. Its development, then, was occasioned by the effort fairly to interpret both sides of controversial situations which arose in the operation of public utilities. One senses the difference between a frantic and a temperate press at the time of coal strikes and railway labor trouble; likewise at times of regional or national economic depressions; likewise when operating regulations for public utilities are being determined or adjudicated by courts or boards representing municipalities, states, or the nation. Found useful in emergencies, when accurate interpretation was desperately needed, public relations liaison was retained to function when interpretation could be justified only as part of normal operation. From public utilities—notably, electric power, transportation, and communication companies; organizations engaged in the mining and distribution of coal and oil; and companies engaged in the packing of meat products—an interest in organized mediation and interpretation developed in the electrical manufacturing industry generally, including the producers of electrical machinery. During the past decade the organized effort of interpreting an organization to its field of force has advanced to embrace professional societies, trade associations, research foundations, as well as numerous industrial organizations, mechanical, electrical, and chemical.

Interpretation of Scientific Achievements. The value of the third party, or counsel, in interpreting the work of science and industry can best be indicated by a specific example. For instance, let us consider the case of a chemist announcing, at a meeting of the American Chemical Society, the completion of a phenomenal research achievement. We should expect this to be reported in trade journals and in the newspaper press. It is the duty of science to make its work known—for the advancement of science, for the

instruction of the profession, and for the information of the public at large. But today scientific advance is so ramified, and specialization so universal, that the average publication may be in no position to obtain a suitable account. The expert reporting of technical achievements, in divers specialized fields, can be accomplished by the magazine or newspaper, *per se*, only when it maintains a large reportorial staff of experts. For most publications this entails an expense too large to carry. Perhaps the press would omit mention of the incident in question; more likely it would publish an account which was sensational, rather than conservative; garbled and ambiguous, rather than concise and accurate. That clever, valuable, inimitable fellow known as "staff writer" is too often made to speak as one in authority, whether about pentosans or ptarmigans, Diesel engines, or television. Looking at the problem from another angle, we find that the researcher responsible for the achievement is seldom in the best position to interpret his work to the public, even though he be willing to make the attempt.

So, too, in industry. The achievement of the research department and laboratory, and of the production unit can best be interpreted by qualified witnesses who specialize in the difficult technic of interpretation. Naturally, it is to be stipulated that *ex parte* witnesses be zealous in obtaining from the actual doers of the work every morsel of evidence which will be conducive to accurate interpretation and thorough understanding. It is assumed, further, that the interpreters will be bound by standards, technical as well as literary; also that their training and experience in a given technical field will have been such as to give authority to their interpretation in that field.

At this point you may suggest that all of the work of the research department and laboratory cannot be talked about to trade journals, to the newspaper press, to clients, to the public. Likewise, it is fair to say that a portion of the work in plant and laboratory is not worth talking about. But, with complete recognition of these conditions, it is the business of the interpreter to consider all factors, and then ethically to disseminate such portions of the available information as may appear, in his judgment, to be interesting, timely, and useful. Information should be released only when it is deemed valuable to the recipient, and to the recipient no less, and in fact a bit more, than to the organization which releases it.

Standards. From these considerations we find that there are several requirements to be met. Science and engineering require, and properly, that the description of technical work be authoritative, accurate, conservative, professional. Next, commercial industry requires that the reporting of its work be accurate and constructive; further, that the report be in accord with a highly individualized, though ramified entity, called policy. Industry stipulates, also, that public relations activity, like other departments, be justified economically as contributing to the *raison d'être* of the particular business of the industry. Finally, the clientele, or the public, requires that the interpretation of technical work be correct, interesting, or advantageous to them—in general, it must be worthy of their attention.

Reviewing the standards imposed upon technical public relations work, and understanding its place and relative importance in industry, we see that it is a subject in which men of science may be expected to be increasingly interested.

Their interest and cooperation, manifested by criticism and suggestion, are indispensable. More than upon any other factor, successful furtherance of public relations work in industry depends upon the intelligent cooperation of physical scientists, engineers, and economists.

Classification of Public Relations Work. Industrial public relations work can be classified into six or eight major branches. The comprehensive program outlined below embraces activities which are variously described as technical publicity, press bureau, educational service, news service, etc.

1. Furnishing technical information to the trade journal and newspaper press, particularly at their request, and in line with established journalistic and technical standards.

2. Cooperation with authors, editors, and lecturers who request informational summaries of an industry or data on some phase of its specialized operation and policy.

3. Preparation of bulletins and institutional literature of a technical nature—involving compilation of data, preparation of text, and selection and captioning of illustrations. This form of manufacturers' literature is devised, not as a general advertising message to customers or potential customers, but rather as technical literature. It may be designed for specific groups—engineers, scientists, students, the public.

4. Cooperation with personnel of industry, by assisting in their preparation of papers and articles for presentation to the professional societies.

5. Cooperation with innumerable organizations and individuals (classifiable as miscellaneous). Their first contact with an industry may, or may not, warrant transference to the other departments, such as research, production, and sales. This heading includes the maintenance of a general information bureau.

6. Preparation and presentation of public addresses; participation in work of professional societies, trade associations, etc.

7. Educational service. This involves the dissemination of information to universities, colleges, and schools; the devising of exhibits, pictorial services, motion-picture films, etc.; also the furnishing of advices for theses and for student projects.

8. Observation and study of the trend of news events, generally, with a view to cooperation with the press in guiding public attention authoritatively to particular science aspects thereof. For instance, the public relations counsel of a company producing helium would be useful to the press and valuable to his company by reason of his being informed on current dirigible flights. Valuable also would be his technical knowledge—of chemistry and physics generally, and of the properties, and isolation problems, of the rare gases specifically.

A subject of especial interest is the field of educational service by industry. Industry meets education along many avenues, but particularly in the transfer of education's product to adult employee status. It is apparent that there must be a liaison of interest between the two fields. Likewise, it is assumed that cooperation by the industrialist is to be responsive to the invitation of the educator. In other words, cooperation is to be along lines which have been approved by educators as sound, ethical, and valuable in the work of the classroom.

But now one may suggest that, in order to justify the maintenance of educational service by industry, the program must be made reciprocally valuable. True, but this reciprocal value to industry must be entirely secondary, and incidental to the primary purpose of education. Whatever is furnished by industry to the schools and colleges—text material, information, or consultation—has properly as its dominant purpose scientifically and conservatively to inform.

Education, and each of the other seven topics enumerated, could profitably be made the subject of a separate treatise. It is the purpose of this discussion to present a concise and balanced introduction to the program of public relations as a whole.

Principles of Procedure. Evidence has been offered to show that public relations activity, as a department of modern technical industry, is properly conducted according to principles of procedure which are sound from the engineering viewpoint. What are these principles? First, reason for the work must be surmised to exist. Second, a logical purpose of the work must be established. Third, the principal subdivisions of the work must be determined; this involves establishment of limits or defining the field of operation. Fourth, all important relevant factors must be listed and appraised. Fifth, the relativity and related importance of these factors must be accurately determined. Sixth, as the locus of field limit broadens, coherence and unity of the principal purpose must remain paramount. Seventh, the central purpose of the work must be in focus from the viewpoint of engineering and science, impersonally, as well as within the focus of the interested industry.

The sequence of this procedure is analogous to the deductive and inductive methods which underlie the logical advance of laboratory and plant work in any technical field. It suggests the engineering maxim of "getting all the facts and then proceeding." Conducted in line with such principles of engineering procedure, public relations work relies on the cooperative interest and support of those engaged in the more operational technical phases of the research department, the laboratory, and the plant. Benefiting from the constructive criticism of economists and physical scientists it will proceed to do its best work, as an adjunct to production and sales, and as a copartner of research, which is the nucleus of the industrial future.

Conclusion

By review of the points we have cited, the subject of public relations activity is doubtless now clearer in mind. We see that the subject is specialized; further, that it does not supplant or duplicate the aim and function of other departments of industry whose designations, because older, are better known. In defining the role of public relations departmental work in industry, you will recall that its prime function is that of interpretation and adjustment. Present-day industry is characterized by market complexities and by rapid transitions of process, of product, and of product application. Because of the importance and prevalence of these factors, research has come to be recognized as the safeguard of industry. In further recognition of these characteristics,

specialized departments are delegated to coordinate, continuously, the viewpoint of an industry, and its reason for existence, with the requirements and interests of the clientele and public which it is in business to serve.

You may not agree with Abraham Lincoln that public sentiment is everything. Lincoln went further to say that "with public sentiment nothing can fail, without it nothing can succeed." You may say, for instance, that there are industries which do not concern the public at all. While exceptions to any such statement can undoubtedly be found, the fact should be granted that the value of coordination between certain industries and the lay public is a minimum compared to an indispensable maximum for others. But in considering the function of public relations work in industry, we do not mean that the field of contact is, necessarily, the millions of men on the street. The public of an industry may involve principally the general public, or the industry's clientele, or both.

Abundantly granted is the fact that the future of industry is governed by the vigilance and extent of its research. Research, to do its best work in safeguarding industry, requires interested support. The conviction that research departments and laboratories are valuable, and the guarantee of their maintenance by the "patient money," of which John Teeple speaks, is based on interest in the results, understanding of the method, and confidence in the value of research achievement. Public relations work whose business it is to inform, to interpret, and to enlist cooperative interest, fulfils, therefore, a fundamental function in industry.

FUNDAMENTALS OF COMPANY PUBLICITY

BY RICHARD D. HEBB, *Public Relations Department, Swift & Company*

The man or corporation, who seeks publicity with the idea of getting free advertising, is making a serious mistake. Publicity is not intended to sell goods. Paid advertising in one form or another will help to do that.

Publicity has an entirely different function, yet it bears directly on the selling problem, in that it is intended as a *builder of confidence*. For example, how far would the small country bank get if it lacked the goodwill and confidence of the countryside?

The chief function of corporate publicity is to place the ideas and the ideals of the corporation in an understandable way before the public. The average newspaper reporter, entirely lacking in business training, ignorant of the workings of the business mind, intent only on one thing, to get the best and the biggest story for his paper, seeks to translate the facts which he secures so that they will be readable, so that they will bring out the things in which he knows the readers of his paper will be interested. He wants facts, and he does his utmost to obtain them, and to have his notes accurate; but his first duty is to his paper, not to the business man, and the manner of presentation of what he secures will not necessarily be to the liking of the man from whom he secures them. So business needs trained men to write its news so that it may be protected, at the same time seeing that the public is fully advised of its doings.

Who Is "The Public"? No discussion of corporation publicity could even approach adequacy were we not to look first at whom the publicity is to be directed. This country, the most prosperous one in the world, as our politicians, business men and bankers tell us, is first of all a nation of wage workers. Its standard of value is the wage rate per hour, or the salary per week, per month, or per year.

There is a subconscious resentment in the minds of most workers to the idea of profits earned by some one from the labors of the many. Right there we have one reason at least for intelligent publicity.

This is a big country, and it takes large scale production to feed it, to clothe and house it, to provide it transportation, amusement, luxuries and the thousand and one necessities as well as the unnecessaries that have come to be regarded as so needful. Yet large-scale production must have earnings if it is to continue. To secure iron ore from the mines along Lake Superior, transport it in boats to the lower end of Lake Michigan, resolve it into steel bars, ship those steel bars to Detroit, shape them into automobile chassis and bodies, motors and springs, to bring rubber from overseas, glass from other factories, and the other fittings, and turn out an automobile requires an immense amount of money before the first man can be given a job to do the first bit of work required. But that first man may be the first one to kick when he reads that the iron mine, and the transport lines, and the various factories all made profits from it. "I dug the ore, and the profits should belong to me because there would have been no automobile if I had not done so," is his specious argument.

Yet a simple explanation would help to change his views. What was the investment before he could get the job? If the corporations told him that they had to hire their money and that the money had to earn its wages and had to receive its wages or it would leave its job and then the worker's job would be gone, the corporation might have an easier time. But one company doing that cannot go far, can do little else, in fact, than to convince its own workers of the story.

Publicize a Person, Not a Corporation. Should a corporation seek publicity, or should it endeavor to go its own way paying no heed to the world outside its own group of shareholders?

The answer to that, of course, lies within the company. There are corporations, and hundreds of them, which flourish without publicity. In the minds of the directors of others, public relations departments are an unnecessary evil. But, if a company, dealing directly or indirectly with the public, and with which the public may feel that it is familiar, wishes to assure itself of a proper understanding of what it seeks to do, it needs and should have a properly organized public relations department.

It is an extremely difficult and well nigh impossible thing to publicize a corporation as such. We, as a part of the great American public, are not interested in the Ford Motor Company. But we are eager to know whether Henry Ford is working on a new Model B. And Henry Ford knows just that—so little is heard of the Ford Motor Company, and much of Mr. Ford and his doings.

Some executive in the company, the higher the better, should become the official mouthpiece, and such stories or statements as are given out should come from him. A story that "The Ford Motor Company announces" belongs in the advertising columns, but "Henry Ford today said," goes on page one. There are, naturally, exceptions to this, but they are not many, and each one presents its problems which must be solved.

As a matter of fact, there are as many problems as there are publicity stories, and almost as many types of publicity as there are stories. If the annual report of the company is to be made public, the thing to consider, for example, is—just what phase of the report is it desired to bring to public attention? Then center attention on that by sending with the report excerpts from the president's address featuring that phase.

Sometimes a story may be told better in motion picture than in words; stereopticon slides lend themselves for similar purposes, especially in an educational way. Public speakers, sometimes hired, at other times company executives with a good stage presence and a knowledge of their subjects, may be used to advantage, either before specialized groups, if the subject under discussion is a specialized one, or on the radio, although in the latter case the talks should be first drawn, and then quartered as to time, because our radio public has a habit of tuning out dry speeches.

Institutional advertising also is a function of public relations work, and a most important one. Institutional advertisements are read, if they are properly prepared.

One such campaign started because of an investigation of an industry. The hearings were entirely *ex parte*, and also voluminous—so much the latter that the larger press associations announced that they would carry only news developed by the investigation, and nothing else. In order that the company's side of the investigation might reach the public, paid space was taken in newspapers, in magazines and special trade publications. The campaign was nation wide, at one time eleven thousand daily and weekly newspapers being used. The chief point of attack was answered with incontrovertible facts, and answered promptly and effectively. Proof that the paid publicity was read was soon apparent; editorials began to appear slowly at first and then later more freely, in which were paragraphs directly traceable to the advertising.

The company which feels it needs publicity, and where no company official is willing to become the publicized person, will find the most satisfactory answer to its problem in institutional advertising, and more in the mechanical motion picture and stereopticon than in the news story.

In that statement I write as the former occupant of the city desk of a great daily newspaper. If people could look into the mind of the man forced to open the envelopes that come to his desk, they would hesitate to send him a letter. Fortunately for the city editors of the larger papers, the city desk sees comparatively little because in their efforts to "get to the top" many public relations experts address their mail to the managing editor, and his wastebasket is larger than that of the city desk.

The managing editor gets recipes for using baking powder that might have been read had they been addressed to the editor of the woman's page.

He learns of a second or third or fourth Jack Dempsey who needs only a little publicity to be greater than the first, he is invited to a private exhibit of water colors by an unknown artist, he is asked to take tea with the most recent Wampas of the movies. Some of this he passes on to the sports department, the art editor, or the motion picture critic, but most of it goes into his wastebasket and a large part goes there because of poor direction and lack of thought on the part of the public relations department.

News for the newspaper, should be directed to that section of the paper to which it must find its way if it is to be used. If it is to be used, it must have news value, which, after all, is what we read a paper for.

Timeliness of Material. In addition to knowing to what department of the paper certain publicity should be addressed, it also is imperative that the public relations department should, insofar as possible, time its release with reference to heavy and light news days. The story which might properly belong on a financial page, for example, would have a much more cordial reception were it released over the Good Friday holiday which prevailed in the stock markets this year. The newspapers had Friday evening, Saturday morning and evening, and Sunday and Monday mornings, when there were no markets. Financial editors at such times are glad to get copy that has legitimate news value.

One such release was a story of about 250 words. It was not only given a cordial reception by the local papers but was carried in full by two press associations, which means that it went to the 2,400 daily papers of one and to 1,400 dailies of another. Indications at this time are that it was very widely used by the papers receiving it. Normally Friday is a poor day for a release, because Friday papers, especially in the larger centers, are what is technically known as "tight" papers, with little space, due to heavy advertising. Saturday and Monday, on the other hand, are usually pretty good days.

Publicity Must Be News. In considering publicity stories, we should look at them not from the standpoint of the company which wants them sent out but from the side of the reading public. That public has not one iota of interest in an individual concern and its doings except insofar as it and its acts affect the public's daily life. The politician knows that; he is a psychologist or he would not be a politician. If what one has to say interests me as a newspaper reader, I will read it, but I will not look at it unless it does.

The city editor of a daily newspaper has the job of merchandising the most intangible and perishable thing in the world—news. It is a commodity when it happens, and not even fit for storage if not sold at once. So be sure that your offering is fresh, that it has a bearing on the reader's daily life and that you do not pick a day when the president is sending a 20,000 word message to Congress, and then maybe it will have a chance to be printed.

The city desk is becoming more alive to the fact that business makes the wheels of the country go around. Newspapers are becoming more friendly toward business stories, but the change is slow. In some isolated instances like the *New York Times* and in a less direct way some of the other larger papers, the editorial staff recognizes the business story as a constructive force, but it must have news value to be used. Mere puffery gets nowhere. The fact that a new food product has been developed has no news value; its place

is in the advertising columns. But the fact that a new method of merchandising an old product, whereby for the first time the housewife has a guarantee of quality, may have direct news value, but its news value will lie in a specific part of the paper. If sent to the city editor, it would rightfully go into the wastebasket; it does not belong in his columns. But it has a definite place on the woman's page of any publication large enough to have a woman's page.

Sometimes it is politic to send some of the new product with a story. Care must be taken, however, that the material is not overshadowed in doing so. In one instance of that kind, a perishable product was sent to the food editors of a restricted list of publications. These products were packed with dry ice, and it so happened that while the product itself was quite familiar to the writers to whom it was sent, none of them ever had seen dry ice before. This product of another concern received most of the attention.

The city desk has a reasonable interest in anything that pertains to the development of the city. Whether it is new buildings, new industries, or new jobs, it has a direct concern in any statement on the public welfare of any citizen prominent enough to warrant his being quoted. It has a direct concern in the city's charities. It is interested in fact in progress, but it has no interest in a new kind of fly paper or in any product, as such.

There is a difference, of course, in what the daily newspaper and what the trade press want and what they will use. As a matter of fact, there is a very decided difference between daily newspapers, the trade press, farm papers, and magazines of general or special circulation. Each must be considered from the angle of the clientele it serves. The trade press is interested in the industry itself, in what a particular corporation may be doing to better the industry. It is interested in the development of new processes, also in the men who work on such developments. It wants to know of their goings and comings, of their aims and how they hope to achieve them.

Viewpoint of the Reader. In the preparation of any publicity material, in my opinion, the chief thing that has to be considered is the viewpoint not of the company for which the material is being prepared but the viewpoint of the reader it is hoped to reach.

Everyone is more or less familiar with radio programs. In many of the successful programs, the advertiser buys sponsored time, pays for thirty minutes, and of that thirty minutes he gets at the most on the average of not more than three minutes. In other words, ninety per cent of the time for which he pays is given to the entertainment of the radio listener and ten per cent is devoted to a discussion of the advertiser and what he has to offer. The man who pays for radio pays for it on that basis quite cheerfully; yet the same man, preparing a publicity story which he hopes to have printed without charge in one or more publications, will insist—if he is not familiar with public relations methods—that his company and his product be plastered all over the story. It is safe to adopt the radio rule of one-tenth or less of the story for the man who thinks he has a story to tell and ninety per cent or more reader interest.

If publicity is prepared from the standpoint of the corporation and not from the standpoint of the reader, it will not get far, except in the case of weaker publications which hope that by using such puffery they may share in

any advertising which may follow. The board of directors may like it better, but if it is not printed, not much good has been done.

It takes a trained nose for news to do intelligent publicity, but it also takes something more than that. I recall one man who worked with me at one time who had one of the best noses for news and feature stories I ever beheld. His nostrils would quiver at the slightest provocation, but he had absolutely no conception of business fundamentals or of business policies.

If he found a news story on the plant, he was after it hot foot, turned in a very good story, but one which frequently was impossible of use from the standpoint of the company because it might disclose a trade secret or run counter to company policy. He was impatient, particularly with the latter feature of his job, his attitude being "to hell with company policy, it's a good story."

It is comparatively easy to hire writers of publicity, but the mere writing is the least of the problem; getting it printed is another matter. As a matter of fact, quite a percentage of publicity today is not prepared in advance, story leads being given instead to the editors, these being followed up by men from the publication itself. There is a little matter of psychology involved, in that a "hand-out" of copy never gets the same consideration on the desk as a piece of copy prepared by a member of the staff.

Training for Publicity Man. If newspapers are to be the chief source from which publicity is sought, the man who handles the public relations work should by all means have had newspaper training, not merely on the street as a reporter but he should have had considerable desk experience in the handling of copy and the steering of news after it is inside the organization. The average reporter is good at picking up a story, but the average reporter in many cases does not know what happens to his story after it is in his own office.

One of the most successful publicity men never prepares a story more than 300 words long, and usually 150 or 200 words will get over what he has to tell. The reason is that the average publication has no trouble in getting leading articles but that sometimes filler material or miscellany required to fill the ends of columns may be scarce, and his brief publicity articles have a very good chance of being set and sent to the bank for use in just such emergency.

A man, to do publicity for a corporation, need have little or no special training in the industry for which he is to do the work. He must have business sense, but the farther away he keeps from the technical side of the industry which he is to represent and the closer he keeps in touch with the public, the better will be his results. The experts in the business, if they cooperate with him, will furnish all the technical information, and he will use his knowledge of the public to take that information and prepare it so that the public will accept it as news.

There should be a very close coordination between the advertising and public relations departments, but there should not be control of public relations by advertising. The mind of the advertising man properly runs toward its own subject—advertising. In saying this I am expressing views which are in direct opposition to those held by many. Many who have public relations departments operated in connection with and under the jurisdic-

tion of advertising departments have been and are very successful. Admitting all that, I repeat that the public relations end of the business will better serve its employer if it is run in close cooperation with the advertising department but as a separate and distinct department of the business.

Several highly successful public relations departments are operated with a minimum of supervision. In a number of instances, a public relations man has the title of assistant to the president and works closely with that executive. Thus when he wants material, he has sufficient authority by virtue of his position to get it with little question from the departments involved. After his material is prepared for publication, it usually is submitted to the head of the department from which it was obtained and if satisfactory to him as to fact only, it is o.k.'d by the president for policy and is then ready for publication. Other organizations have public relations committees which operate very successfully. The fewer people who have to do with the copy after it is prepared, the better will be that copy because most of us feel that we are pretty good writers. It is a skillful copy reader who can handle a piece of copy with a minimum of change. The poorer the copy reader, the more changes.

Handling Adverse Comment. One of the fundamentals of publicity is the handling of adverse comment. The best and simplest way to control it is to control it at the source, to seek out in advance things which might be adversely commented on, and strive to have them remedied before they become public. Publicity can be directed; for example, in the case of fire, or strike, or some similar subject.

An instance of a fire may be cited. It was a 5-11 alarm, apparatus from all parts of the city in which the plant was located being called. The public relations department covered the fire and promptly telephoned all of the facts to the City News Bureau, which sent them to the various papers. The result was a story which was not overplayed and which gave assurance that production in that plant was not interfered with in any way by the fire. An attempt to cover up the facts would have resulted in an overplay written in a more or less unfriendly fashion.

In the case of labor trouble, arrangements should be made to see that the newspapers are supplied with the facts. If the facts hurt the company, then those facts they should be met frankly and acknowledged, because they will come from the other side if it is not done and come out in a more damaging way.

It used to be the fashion on railroads in the case of a wreck to hide the facts as much as possible. I recall as a reporter in Kansas City, Missouri, covering a wreck one Sunday night. We had such facts as could be gotten on a night when there was no telegraph operator at the way station where the wreck occurred. We learned that a train loaded with injured was on its way to the city. When it arrived, reporters from the various papers in Kansas City were on hand. I was one of them. The claim agents of the road climbed off the train first and attempted to shoo us off the platform; we did not shoo, so they literally booted us out of the station, refusing all facts. The result was that I paid \$5 to an interne who was riding on one of the ambulances for the use of his coat and rode in the ambulance with two of the injured, securing from them most harrowing eye-witness stories. The paper for which I worked

played that story for more than two columns where, as a matter of fact, it was not worth more than a half column at the most. That is human nature.

I recall the attitude of a certain city desk toward certain railroads at one time. One of the roads when it had an accident would do its utmost to cover up the facts, with the result that such strenuous efforts were made to get the story that it was sometimes overplayed, and nearly always found a big headline. Another road, if it had an accident, would beat the press association into the newspaper offices with the story. Its statement would be terse but clear, and there would be a list of dead and injured if there were dead and injured in the accident. The result was that that railroad got much better consideration than the one which attempted to cover up.

Another instance of that kind deals with an explosion in a large mill. Reporters and photographers were sent to the site and were thrown out of the enclosure and thrown off the company property. They were refused permission to see any executive of the company, and the executives refused to issue a statement of any description. There had been deaths and the coroner's assistants were on the scene, and from the police and these men such facts were secured as they had. The coroner's figures of the dead and injured were taken and the story printed. In passing I may say that all the lurid details possible were given to the story by the reporters who had been handled rather roughly.

The day after the story, an executive of the corporation appeared in the city editor's office of one newspaper and demanded a correction on the story, saying it was all wrong. The city editor listened to him and asked him what the real facts were. "The real facts are our private business," was the reply, "but your statements were wrong, and I demand a retraction." The gentleman was told that he might leave the office peaceably and not return until he was prepared to give the facts on which he based his statement that the story was wrong. That is not public relations, yet there are many corporations which attempt to do business with the newspapers in just that way.

Desirability of Direct Contact. Wherever possible, a better understanding between business and the newspaper is best secured by direct contact. So much publicity, however, is being sought today that publicity men are sending out reams of copy. Professional publicists send out, in some instances, clip sheets containing stories not only for one client but for several, and in many cases are getting some results. Such publicists and their clients also are coming in for most beautiful lambastings at the hands of editorial associations and editorial magazines.

One of the chief subjects of discussion at editorial meetings is publicity and how to avoid it. An ideal set-up in a corporation would be the organization of a public relations department and contacts with news sources developed which would bring out that the public relations department was organized not for the purpose of securing publicity, but for the purpose of having centered in the department all the news sources within the corporation so that at any time a publication desired news of the industry, it could be secured quickly and accurately.

One public relations department has sent out so little real publicity material and has built for itself the reputation of furnishing news when it does send anything out, that certain press associations and certain editors look to it for news of its industry. There have been instances where stories derogatory to that particular industry have been held until the industry's answer was ready to ride with the original story. That in itself is of incalculable value because once a story is printed, it never is possible to catch up with it and overcome the lead which it has attained.

News is news today and dead material tomorrow, whether it is advantageous fact or denial. If direct contacts can be made, they should be, because frequently corporations are visualized to the outsider through the employee who is known. If that employee is a pleasant, four-square, straight-shooting individual, and liked, then the company also is liked.

Handling News Releases. There are several methods of handling news releases. If the story is of national interest, it may be released through the local office of the press associations, after also having been given to the local newspapers. A "hold for release" notice with the time set, being sure on a national release to specify whether it is Eastern Time, Western Time, or just what hour is meant, is all that is necessary to keep a story from premature publication. It is well to recognize that at the present time all of the great press associations send out material by mail in order to decrease their wire charges. Stories to be sent in this way should be sent as far ahead as possible. Usually, if they are good stories, they will get a better ride if sent in this way—by mail—because mail is cheaper than telegraph, and the editors of press associations have a certain friendly feeling for the man who thus helps them to keep down costs. There need be no hesitancy in trusting facts for future release to any reputable publication or news association.

In the case of financial releases, such as annual reports and similar statements, there are other news sources than the public press that should be recognized—ticker services, special financial publications, special trade journals, all should be covered. These news releases should go far enough ahead to provide time for adequate handling. This is a convenience to the publication and also is a matter of insurance for the company, as hasty handling increases the chance of error.

There are certain things to be borne in mind in any news release. Newspaper stories start with the climax and then go to the detail and facts. Magazine articles are just the reverse, building up the facts to the climax. Radio announcements are a climax only.

Reports on Publicity Work. One phase of the question which usually gets little consideration is—shall the publicity man make written reports on his work? It is easily answered—no.

Boards of directors like to know what is being done for the money they spend, but publicity men, as well as department heads, in making reports, are too prone to give credit to themselves for virtues which they do not possess. There have been instances of this in the not too dim past in public relations work, where publicity men have written of their dear friend, Editor So-and-So, who is "eating out of my hand," and where intimate little reports of this nature have found their way into the public print, to the undoubted embar-

rasement of Editor So-and-So and to the confounding of the publicist. There is no doubt that Editor So-and-So is more apt to bite the hand of the publicity man than eat out of it the next time they meet.

In summing up the work of the public relations department, there is only one thing that counts and that is accomplishment. It can be shown by clippings and not by reports of the friendliness of this editor or that for the publicist. The public relations department that is not in good enough standing with its own organization so that it can make oral reports does not deserve to exist.

Intracompany Publicity. An important phase of publicity is intracompany publicity relations. If a company's employees are not sold on the company itself, then the publicity will lack much of its effectiveness. It is well to remember that every employee, whether he be office boy, truck pusher, barrel roller or whatnot, is a finger of the company reaching out into the neighborhood in which that employee lives. If that finger is an unhealthy, sore one, it will spread infection, whereas if it is a healthy, clean finger, it will do helpful work.

The Branch Manager, a Goodwill Ambassador in the Community. One important factor in the translation of business to the public and one that sometimes may be overlooked, is the development of a branch manager as a goodwill ambassador in his community. There is a growing tendency at the present time for communities to develop "trade at home" slogans. The manager of a branch plant in such a town is a local man. As a rule he is a permanent resident, maintaining a home, sometimes owning one, paying taxes, belonging to the local organizations, and taking part in the life of the place in which he lives. He employs local people, has a pay roll, frequently buys considerable material there. In fact, he is bringing much money into the town life. But if he does not watch his step, he may remain an outlander for all that.

He can, tactfully, call attention to the things which he is doing for his community. To the fact that he is in fact "home folks," and thus help to build up a demand for more homemade goods.

The fact that a national organization may have branch plants is, in fact, one means of developing favorable publicity. In buying local labor and local materials for manufacture and then selling then nationally a concern opens nation-wide markets for a local commodity, and is thus able to pay prices based on national demand rather than merely local. And this sometimes is news. A carload of goods manufactured in a small town and shipped to some distant point is always an item of news for the local paper.

Corporation Publicity Is Growing. It will continue to grow if it is intelligently directed, because the public is wakening now to the fact that upon the prosperity of business depends their own prosperity. They are developing a more or less intelligent interest in business as such, but the intelligent translators of business at the present time are too pitifully few.

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